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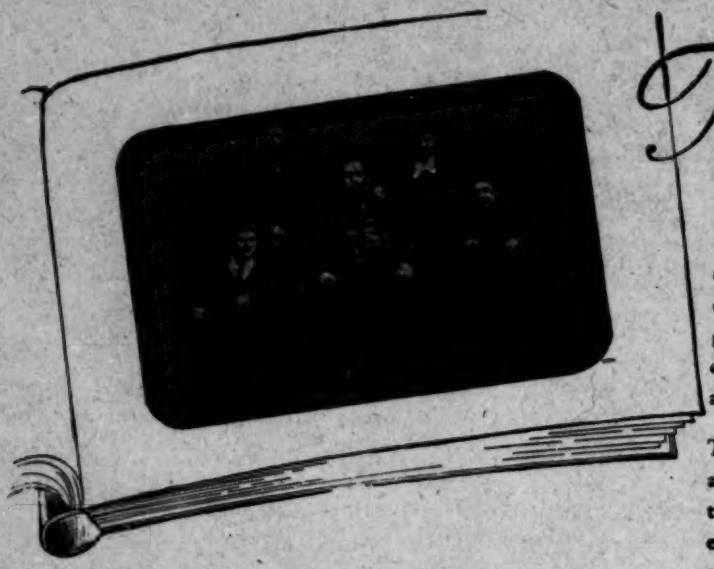

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 8 1943

DESOXYCORTICOSTERONE IN ADDISON'S DISEASE

A COMPARISON OF DIFFERENT METHODS OF ADMINISTRATION

BY

D. M. DUNLOP, M.D., F.R.C.P.Ed.

(From the Clinical Laboratory, the Royal Infirmary, Edinburgh)

It is well established that desoxycorticosterone acetate (D.O.C.A.) is highly effective in the treatment of Addison's disease when given intramuscularly or implanted in pellets under the skin. The drug is ineffective when swallowed. The repeated injection of an oily solution, however, is inconvenient, especially for thin patients with poor muscles, who form the majority of those suffering from Addison's disease; in addition such an injection usually involves a visit to the doctor, and for the uninsured this may add considerably to the already high cost of the drug. The implantation of a big single dose of D.O.C.A. practically eliminates these drawbacks, since such an implantation may suffice for many months. Once implantation has been made, however, there is no means of controlling dosage. Thus dangerous toxic effects such as massive oedema and hypertension are theoretically possible from the excessive absorption of the active principle, and these have been noted by Loeb (1940).

Anderson, Haymaker, and Henderson (1940) reported good results from the sublingual administration of D.O.C.A., comparable to those obtained by injection. Two to six mg. of the drug dissolved in propylene glycol were given daily in divided doses, the drops being retained under the tongue for as long as possible. The D.O.C.A. so administered appeared to be a satisfactory form of replacement therapy for six patients over a period of six to eight weeks. Similar good results were obtained by Turnoff and Rowntree (1941) in two cases. Wilson (1942), on the other hand, found the sublingual use of D.O.C.A. dissolved in propylene glycol of little or no therapeutic value. Despite the daily sublingual administration of as large a dose as 10 mg. the four patients studied showed an alarming tendency to relapse into Addisonian crisis, though they had all previously been maintained satisfactorily by smaller intramuscular doses.

During the last year and a half an investigation has been undertaken into the effectiveness of D.O.C.A. when absorbed from the buccal cavity, and a comparison has been made between its potency when administered in this way and when given by implantation or intramuscular injection. Seven patients suffering from characteristic and unequivocal Addison's disease have been studied.

Criteria of Potency

Some initial difficulty was experienced in determining the clinical criteria to be adopted in assessing the potency of the drug. The mere subjective sensations of the patient were obviously unsatisfactory and unreliable; the blood pressure in Addison's disease often remains low in spite of considerable clinical improvement, and is not an accurate expression of the progress of a case; the blood chemistry is also an inadequate index of the effectiveness of treatment (Dryerre, 1939) since it is often quite normal during the more chronic phases of Addison's disease (Snell, 1934) and it is only at the onset of crisis that significant changes take place in the urea, sodium, and potassium content of the blood (Allott, 1936). D.O.C.A. has, however, such a potent effect in causing retention of sodium that oedema is easily produced even in Addison's disease when it is administered along with salt. The development of oedema may therefore be taken as an indication that the drug is potent, since salt alone in doses up to 15 g. a day will not produce oedema. Even in the absence of actual oedema a steady gain in weight will suggest that the drug is active, especially if the weight falls again when its administration is discontinued.

Sublingual and Sublabial Methods

Fig. 1 shows the effect of the daily sublingual administration of 10 mg. of D.O.C.A. on the weight of two patients suffering from Addison's disease. The drug was dissolved in propylene glycol, and administered by a special dropper under the tongue, being left there without swallowing for 15 minutes. Seven applications of four

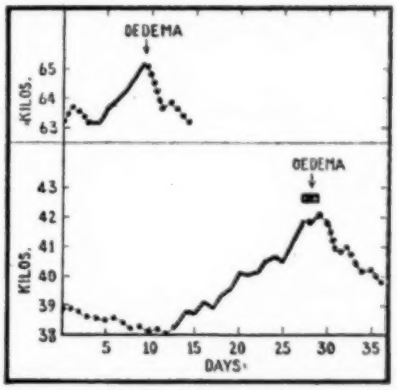


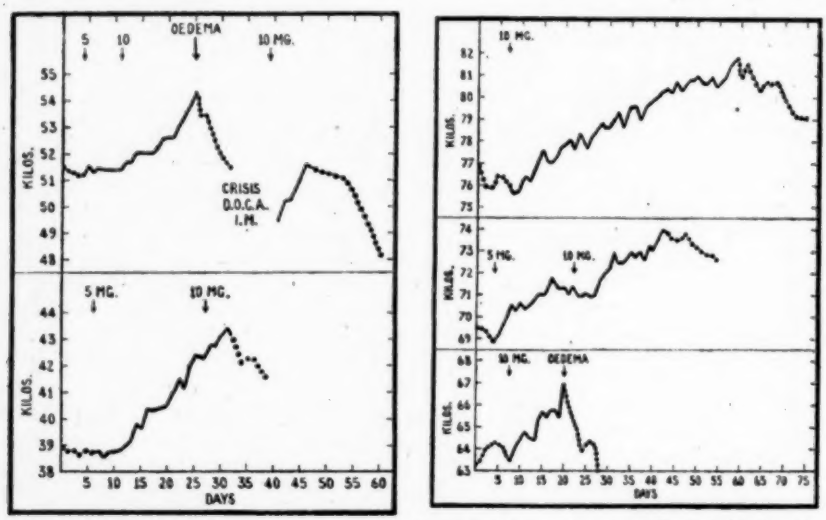
FIG. 1.—Effect of sublingual administration daily of 10 mg. of D.O.C.A. dissolved in propylene glycol. The dotted line represents the administration of salt alone; the continuous line represents the administration of salt and D.O.C.A.

drops were given each day, equalling a total dosage of 10 mg. Throughout the observation 7.5 g. of salt were given daily. The ease with which oedema was produced in the first case was due to the fact that the patient had previously been well hydrated by the use of salt and intramuscular D.O.C.A.

As oedema was produced in both cases these two experiments seemed to prove that D.O.C.A. was successfully absorbed when given sublingually. In propylene glycol the taste of the drug was not objectionable, being like that of the crushed pips of apples, but the method was excessively tedious and laborious. It is true that the smaller doses required for simple maintenance treatment would not have involved so much trouble, but a less cumbersome administrative technique was obviously desirable.

In consequence Organon Ltd. supplied small tablets of D.O.C.A., each containing 2.5 mg. of the drug, which could be held without difficulty between the upper lip and gum for a long time, even after they had begun to crumble. It was hoped that in this situation there would be so little salivary washing of the tablet that any escaping steroid would be absorbed from the oropharynx and pharynx, and that scarcely any would reach the gastric mucosa.

Figs. 2 and 3 represent the effects produced on the weight of five cases of Addison's disease by the drug administered in this way. It will be seen that oedema occurred in only two of the patients. Both of these had received very adequate treatment by intramuscular D.O.C.A. and salt before the experiment began. The other three patients were untreated cases of Addison's disease; starting in a dehydrated state, they had to leave hospital before oedema was produced. In each of these latter cases, however, a significant gain in weight occurred when sublabial D.O.C.A. was given, and weight was lost as soon as it was stopped, in spite of the fact that the daily dosage of 7.5 g. of salt was continuous. Clinical improvement paralleled the gain in weight, and in one case crisis developed when the drug was withdrawn.



FIGS. 2 and 3.—Effect of D.O.C.A. in doses of 5 or 10 mg. daily, administered sublabially in tablets.

These experiments seemed to leave no doubt that D.O.C.A. given in tablets sublabially is effective in the treatment of Addison's disease. Using 2.5 mg. tablets in this way, 10 mg. can easily be administered daily without any of the inconvenience of the sublingual method, and without the disadvantage of making the patient dependent on a doctor or nurse for frequent intramuscular injections of an oily solution.

Deep Subcutaneous Implantation

The late Dr. Henry Dryerre, working in this department, was among the first to observe the effect of D.O.C.A. in Addison's disease when implanted in pellets in the deep subcutaneous tissues. During the past four years we have treated three patients successfully in this way, seven separate implantations having been made. Two of them are in good health. One has died owing to the administration of a general anaesthetic, to which patients with Addison's disease are notoriously intolerant. The implantation of a single dose of 200 mg. of D.O.C.A. kept these patients in good health for periods varying from six to eight months. Subsequent implants then became necessary. The technique is perfectly simple, and no untoward effects, such as those recorded by Loeb, have been produced during the course of seven implantations. It is quite possible that a larger initial implantation—say of 400 mg.—would be safe and would last twice as long as 200 mg., but so far we have not had an opportunity of confirming this possibility.

Comparative Dosage

Owing to the considerable cost of D.O.C.A. it seemed important to ascertain how it could be administered most economically. In one case a comparison has been possible between the minimum dosage required to maintain the patient's weight and to keep him in good clinical condition when the drug was administered by implantation, by intramuscular injection, and by the sublabial method. Similar comparisons have been made in two other cases between two of the techniques —either the implantation and intramuscular or the intramuscular and sublabial methods. The results are shown in the following table:

	Method	Duration in Months	Total Dose in Mg.	Average Requirement per Week in Mg.
Case 1	Implantation	7	200	6·9
	Implantation	6	200	7·7
	Intramuscular ..	6	240	9·2
	Sublabial	1½	170	28·3
Case 2	Implantation ..	6½	200	7·1
	Intramuscular ..	3	120	10·0
Case 3	Intramuscular ..	4	120	7·5
	Sublabial	1	155	38·8

It will be seen that D.O.C.A. is rather more economical when implanted than when injected intramuscularly. It is also more convenient for maintenance purposes, though the intramuscular method should be used in the treatment of Addisonian crisis and in the initial control of an untreated case. Both methods are much more economical than the sublabial technique, which requires from three to five times as much of the drug to produce the same therapeutic effect. It is true that the pharmaceutical packing of the drug in phials or ampoules and the bacteriological sterility tests involved may increase the cost of the parenteral preparations by a few shillings. Such pharmaceutical packing and bacteriological work, however, are relatively so inexpensive in comparison with the cost of the original materials and the chemical processing as to make little difference to the total cost of the final product.

Summary and Conclusions

D.O.C.A. has proved effective in two cases of Addison's disease when administered sublingually dissolved in propylene glycol. The method is very cumbersome and wasteful.

D.O.C.A. has proved effective in five cases of Addison's disease when administered sublabially in tablets. The method is convenient but very wasteful.

Three cases of Addison's disease have been treated by implantations of D.O.C.A. Seven implantations in all have been made, each of 200 mg., without untoward effects. Each implantation has sufficed to keep the patient in good clinical condition for periods varying from six to eight months. It is suggested that implantation is the method of choice on the grounds both of economy and of convenience.

The intramuscular injection of D.O.C.A., though very effective, is rather less economical than its implantation and much more inconvenient. It should be reserved for the initial control of untreated cases and for the treatment of Addisonian crisis.

I am indebted to the Moray Research Fund of Edinburgh University for a grant in aid of the purchase of the D.O.C.A. pellets for implantation, and to Organon Ltd. for supplying the tablets of D.O.C.A. for sublabial use.

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Dogs depleted of protein are very susceptible to injurious agents, especially to chloroform. L. L. Miller and G. H. Whipple (*J. exp. Med.*, 1942, **76**, 421) find that methionine administered to dogs shortly before chloroform anaesthesia gives them complete protection against this drug. Similar protection against liver injury is also afforded if methionine—an essential sulphur-containing amino-acid—is given three to four hours after chloroform anaesthesia. They point out that in the past, and often in the present, cases of liver injury are treated with a high carbohydrate diet. Agreeing that there is good reason for this, they state that on the basis of modern work the correct treatment is to give a diet which is high in protein as well.

THE INVESTIGATION OF HAEMOLYTIC TRANSFUSION REACTIONS*

BY

P. L. MOLLISON, M.B., M.R.C.P.

(*Concluded from p. 532*)

Interpretation of Tests

The large number of tests described above will not all have to be applied in the majority of cases. The procedure should be to test for the most likely cause first and only to apply other tests when the first ones are negative or inconclusive. For instance, preliminary regrouping of the blood of the donor and recipient may reveal a mistake in A–B–O grouping, and in such cases no other tests will be necessary (Cases 1 to 4). Alternatively, if no theoretical incompatibility according to the A–B–O system is revealed between the donor's cells and the recipient's serum, but the recipient is a woman who has given birth to an infant affected with erythroblastosis foetalis, the possibility that the reaction has been caused by previous immunization of the recipient to the Rh agglutinogen should be first considered and the appropriate means taken to test this possibility (Cases 5 and 6).

When a blood sample is taken from the recipient immediately after an incompatible transfusion it should be realized that it may contain an appreciable number of donor cells and that this may possibly lead to a mistaken diagnosis of the recipient's group. Thus, for instance, in Case 4, 24 hours after the transfusion of group B blood to a person of group O the recipient's circulation contained appreciable numbers of B cells, both agglutinated and unagglutinated. In the case of the A–B–O groups mistakes are not likely to be made, however, because the appearance of partial agglutination is so different from the usual complete agglutination of the A and B reactions. In the case of incompatibility due to Rh differences mistakes are more likely, however. When an Rh-negative person already sensitized to the Rh agglutinogen is transfused with Rh-positive cells the post-transfusion sample may contain appreciable numbers of Rh-positive cells although their destruction is proceeding rapidly, and this may lead to the impression that the recipient is Rh-positive (see Diamond, 1942, for instance). The use of powerful sera should enable this appearance of partial agglutination to be recognized with certainty from that of complete agglutination.

When the donor's cells are retested against the recipient's serum it must be remembered that the titre of the offending agglutinin in the latter may be very low after transfusion, so that the donor's cells may appear to be compatible with the recipient's serum. For this reason the pre-transfusion sample of serum from the recipient should be used whenever possible, or else a sample taken at least five days after transfusion.

It must also be borne in mind that in recently delivered women immune agglutinins may be found in the serum owing to stimulation by foetal agglutinogens occurring during pregnancy. There is evidence that when the foetal red cells contain either the A or B agglutinogens and the mother's red cells lack the same agglutinogens, the mother's anti-A or anti-B agglutinins are increased in titre after delivery not only in a proportion of cases (Jonsson, 1936) but in the great majority, reaching a maximum titre 10 to 20 days after delivery (Boorman, Dodd, and Mollison, unpublished observations). In recently delivered women care must therefore be exercised in interpreting the results of serial titrations of agglutinins.

It may be added that agglutinins in the recipient's serum which are not active at 37° C. are in our experience not capable of causing the destruction of transfused red cells.

If stored blood has been used inquiries should be made as to how long it has been stored; inquiries should also be made as to whether the blood was allowed to stand at room temperature for an excessive length of time. The answers to one or other of these questions may suggest the most probable cause for signs of haemolysis following transfusion.

Only when the above causes have been excluded should the possibility that the signs of haemolysis are due to destruction of the recipient's own red cells by high-titre incompatible agglutinins in the recipient's plasma be considered. In such a case the application of the method of differential agglutination is practically essential in establishing that the signs are not due to destruction of the donor cells, although the agglutinins in the donor's plasma must also be titrated.

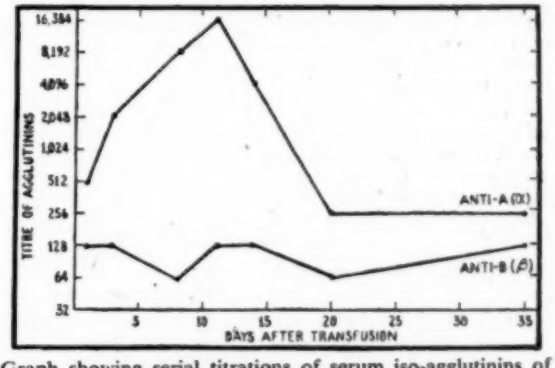
Case Records

The following cases illustrate some of the points referred to in the text and some of the methods of investigation. Cases 1 to 8 illustrate a few of the features of incompatible transfusions. In Cases 1 to 4 blood of incompatible A–B–O group was transfused; in Cases 5 to 8 the blood was of suitable A–B–O group but was Rh-positive and proved incompatible because the recipient had become sensitized to the Rh agglutinogen. In Cases 1 and 2 the early onset of the classical symptoms of severe lumbar pain caused the transfusion to be abandoned after only small amounts of blood had been given. In Case 3, however, an injection of morphine prevented the recurrence of this symptom after its early onset. In Cases 5 and 6 the onset of characteristic symptoms was delayed, and in Cases 4, 7, and 8 no characteristic symptoms developed at any time; in all these cases, therefore, considerable amounts of incompatible blood were transfused. Case 9 illustrates the fact that the occurrence of a rigor does not necessarily indicate incompatibility even when, as in this case, the recipient is Rh-negative and the donor Rh-positive.

In Case 10 the transfusion of grossly haemolysed blood produced the signs of a haemolytic reaction. In Case 11 the transfusion of heavily infected blood gave rise to signs which might have been mistaken for those of a true haemolytic reaction. In Case 12 the possibility of a haemolytic reaction due to incompatibility of the donor erythrocytes was excluded by a cell-survival test.

Case 1 : Donor, Group AB; Recipient, Group O.—The patient was a woman aged 60; diagnosis, carcinoma of the colon. Her blood group was determined by the hospital as AB, and a transfusion of group AB blood was begun. No previous direct matching was carried out, owing to a misunderstanding. After a very small amount (about 10 c.cm.) of blood had been transfused she complained of very severe pain in the back. It was assumed that the patient, who had previously received a transfusion of group O blood, had become immunized to the Rh agglutinogen and that the reaction was due to the fact that the donor blood was Rh-positive. The Blood Transfusion Service was therefore asked to supply group AB Rh-negative blood. At this point the patient's blood was submitted for investigation and was found to belong to group O Rh-positive.

Case 2 : Donor, Group A; Recipient, Group O.—Woman aged 35; diagnosis, duodenal ulcer with melaena. Blood group determined by hospital as A. Transfusion of group A blood started.



Graph showing serial titrations of serum iso-agglutinins of a patient of group O who received a transfusion of 45 c.cm. of group A blood (Case 2). The titre is expressed as the reciprocal of the greatest dilution in which agglutination of standard test cells occurred (judged microscopically). In cases in which larger amounts of incompatible blood are given the offending agglutinin is usually found to have a very low titre during the day or two after transfusion.

Almost immediately after the beginning of the transfusion the patient felt her face "flaming," then she had a very severe throbbing pain in her lumbar region and felt faint. The pain in the back was intense. The transfusion was stopped after 45 c.cm. had been given. Afterwards she shivered for about an hour, and then became very

* A report to the Medical Research Council from the S.W. London Blood Supply Depot.

hot and complained of a headache. By the next morning she was perfectly well, but investigations were requested. The recipient's group was found to be O; during the next two weeks the anti-A agglutinin steadily increased in titre, reaching a figure of 16,384, whereas the titre of the anti-B agglutinin remained at 64 to 128 throughout (see Graph). These titrations, as well as the other serum titrations mentioned in this paper, were carried out by Miss K. E. Boorman and Miss B. E. Dodd, to whom my thanks are due for permission to include the results.

Case 3 : Donor, Group A; Recipient, Group O.—A woman aged 30; grouped as A by hospital, transfused with 1,000 c.cm. of group A blood. After receiving 5 c.cm. the patient complained of throbbing in the head and back, and the transfusion was stopped. The symptoms were considered to be neurotic, however, and omnopon gr. 1/3 was injected. The transfusion was restarted, 500 c.cm. being given, without the production of further symptoms, in one and three-quarter hours. At the end of this time the patient developed a rigor, but another 500 c.cm. of blood was transfused during the next 3 hours. At the end of that time a second injection of omnopon was given. The patient slept well, and on waking in the morning had no symptoms. No abnormality of the urine was noted and she did not become jaundiced. The blood urea was estimated on the sixth day after transfusion and found to be normal (30 mg. per 100 c.cm.).

The patient was first seen 9 days after transfusion, not because any suspicion of incompatibility had been aroused, but merely because a request had been received for a further transfusion. Investigations showed that her blood group was O and not A as had been previously believed. Her cells showed no trace of agglutination with a potent anti-A serum—demonstrating (as might have been expected) the complete elimination of the blood given at the first transfusion. Titration of the recipient's iso-agglutinins showed that, whereas the anti-B agglutinin had a titre of 1,000, the anti-A titre was 262,000. Recovery was uneventful.

Case 4 : Donor, Group B; Recipient, Group O.—A woman aged 63, suffering from carcinoma of the lung. Group determined by hospital as B. A transfusion of 600 c.cm. of group B blood was given in 7 hours. Only 250 c.cm. of blood was administered during the first 5 hours, but at the end of this period the patient passed 120 c.cm. of red urine. The transfusion was continued until 600 c.cm. of blood had been given, but investigations were requested in case the passage of red urine had had any untoward significance. Apart from a feeling of hotness towards the end of the transfusion the patient did not develop any symptoms, and considered that she had benefited by the transfusion.

Investigations carried out next day showed that the patient's blood group was O and not B as had been supposed. Examination of a saline suspension of her blood revealed the presence of small scattered agglutinates, the largest consisting of from 8 to 12 cells. These agglutinates could be increased in size by the addition of anti-B serum, showing that besides the agglutinated group B cells there were a number of unagglutinated group B cells remaining in the circulation. As anticipated, the titre of the anti-B agglutinin was found to be very low.

The serum contained 1.3 mg. of bilirubin per 100 c.cm. but no methaemalbumin. (Specimen kindly examined by Mr. R. J. Bromfield.) This latter finding seems important because it is not generally recognized that this pigment may be absent from a sample of the recipient's plasma after the transfusion of a considerable quantity of incompatible blood even when the sample is obtained within 20 hours after transfusion.

A sample of urine obtained 24 hours after transfusion showed no free haemoglobin, but there were a few haemoglobin casts in the centrifuged deposit. The reaction of the urine was acid. The blood urea on the fifth day after transfusion was 35 mg. per 100 c.cm. (after a meal of fish). Death occurred on the sixth day, following signs and symptoms suggestive of pulmonary embolism. Unfortunately permission for necropsy could not be obtained.

Note on Cases 1 to 4.—The grouping mistakes that were responsible for the giving of these four incompatible transfusions were directly due to the use of infected test serum in at least two of the cases; but the fundamental errors in all four cases were the failure to use controls of any kind, presumably owing to over-confidence in the technique used, and the failure to carry out direct matching before transfusion.

Cases 5 to 8 : Donor, Rh-positive; Recipient Rh-negative, Sensitized to the Rh Agglutinogen :

Case 5.—The patient was a woman aged 25 who five days previously had given birth to twins affected with hydrops foetalis. Her group was O Rh-negative, and her serum contained anti-Rh agglutinins. She was transfused with a concentrated cell suspension prepared from the blood of two donors, both of whom were thought at the time to be Rh-negative. In one hour 250 c.cm. of cell suspension was given without the occurrence of any reaction. Shortly afterwards, however, while the transfusion was still running, the patient started to complain of violent lumbar pain, difficulty in breathing, and generalized discomfort. A violent rigor followed. The transfusion was stopped after 300 c.cm. of the suspension had been given. A venous sample was obtained three hours after beginning the transfusion. The serum contained no free haemoglobin but was intensely icteric. The serum bilirubin was found to be 4 mg. per 100 c.cm., compared with the pre-transfusion figure of 0.2 mg. Moreover, the post-transfusion sample of serum gave a " direct " van den Bergh reaction.

Investigations with potent test sera showed that one of the donors was in fact Rh-positive and that all the cells of this donor had been eliminated within three hours of starting transfusion. From the clinical point of view this reaction might well have been considered non-haemolytic, since there was no haemoglobinuria or jaundice.

(Some of the details of this case have been reported previously by Boorman, Dodd, and Mollison.)

Case 6.—(The details of this case are being reported separately elsewhere.) The patient was a woman aged 47. She had had four previous pregnancies, the last 14 years ago. She was admitted to hospital with a diagnosis of menorrhagia. A transfusion of 500 c.cm. of group O blood was given. No characteristic symptoms occurred during the transfusion, although a rigor followed it. Next day she was jaundiced, complained of pain in the loins, and passed only 10 oz. of urine. A sample of urine obtained 36 hours after transfusion contained albumin, haemoglobin, bile pigments, and a trace of sugar. Investigations carried out 18 days after the transfusion showed that the patient's group was O Rh-negative and that the donor group was O Rh-positive. Her serum contained moderately strong anti-Rh agglutinins.

The most interesting feature of this case seems to be the persistence of sensitivity to the Rh agglutinogen for at least 14 years, and, moreover, a sensitization of sufficient degree to give rise to a severe haemolytic reaction.

Case 7.—The patient was a woman aged 30 who was given a transfusion of 1,000 c.cm. of group O blood after a severe post-partum haemorrhage. Investigations were requested a week later because the haemoglobin was only 39%. The transfusion itself had been symptomless, and was not followed by jaundice or by any other noteworthy signs. Investigations showed that the patient was group A Rh-negative and that her blood contained a negligible number of group O cells, despite the fact that it was only 7 days since the transfusion. Her serum was found to contain weak anti-Rh agglutinins. The infant's blood was examined for evidence of a haemolytic anaemia, but it appeared to be perfectly normal and the haemoglobin was 120%.

It seems possible that in this case the mother's serum did not actually contain anti-Rh agglutinins at the time of the transfusion but that they were rapidly evoked by the transfusion and that the woman had been sensitized by her pregnancy (the infant was found to be Rh-positive). If this theory is correct this case should not strictly be included, since the definition of haemolytic reactions has been confined here to cases in which destruction starts immediately after transfusion. However, it illustrates well how easily this type of reaction may be overlooked and the features of these reactions merge imperceptibly into those in which destruction starts more rapidly after transfusion.

Case 8.—The patient was a woman who gave birth to her second infant on Aug. 23, 1942. The infant became jaundiced within 24 hours of birth, but a blood count on Aug. 25 showed that its red cell count was 5,320,000 and that its haemoglobin was 105%, so that the diagnosis of haemolytic disease was considered to be excluded. On Aug. 27 a transfusion of 500 c.cm. of a concentrated suspension of red cells prepared from 1,000 c.cm. of group A blood was administered to the mother with a view to correcting a mild secondary anaemia. After transfusion the patient developed a rigor but no other signs or symptoms, and no investigations were carried out at the time.

The infant remained jaundiced, and was seen on Sept. 1. At that time its haemoglobin had fallen to 64% and a diagnosis of haemolytic disease was made. Serological tests showed that the mother was group A Rh-negative and that her serum contained anti-Rh agglutinins. It was noted that no trace of agglutination occurred when the mother's blood was tested with two very potent anti-Rh sera. Since both donors were found to be Rh-positive it was clear that all the donor cells had been eliminated.

Case 9 : Donor, Group O Rh-positive; Recipient, Group O Rh-negative, not apparently Sensitized to the Rh Agglutinogen.—The patient was a woman with three normal children; she was now pregnant for the fourth time and only two weeks from term. Her haemoglobin was found to be 52%, and she was given a transfusion of approximately 750 c.cm. of a concentrated suspension of group O

red cells. After the transfusion the patient had a mild rigor, and investigations were requested. These showed that she was group O Rh-negative, but that her blood contained a considerable number of Rh-positive cells, while her serum contained no anti-Rh agglutinins. All four donors who had contributed to the red cell suspension were Rh-positive. A normal infant was delivered two weeks later. One month after the transfusion the patient's blood stream still contained a considerable proportion of Rh-positive cells. It seemed clear, therefore, that the rigor following transfusion was not associated with an abnormal destruction of the donor cells.

Case 10 : Haemolytic Reaction simulated by the Transfusion of Haemolysed Blood.—This patient was an elderly woman with carcinoma of the stomach. It was decided to give a blood transfusion because of her anaemia, and a bottle of a concentrated suspension of red cells was ordered from the Blood Transfusion Service. When the bottle arrived it was placed in the ward refrigerator. A few hours later the doctor arrived to carry out the transfusion and called for this bottle. The probationer went into the room in which the refrigerator was situated, saw a bottle of blood standing on a shelf, and assumed it was the right one. The transfusion of this bottle was completed in two and three-quarter hours, and although no alarming signs or symptoms developed it was noted that the patient was rather flushed and that her temperature had risen to 101° and her pulse rate to 130 to 140. Investigations were requested.

The patient was visited approximately three-quarters of an hour after the end of the transfusion. She was rather flushed and sweaty and had a rapid pulse. The bottle of blood had unfortunately been washed out and only a portion of the label remained. From the data on this portion, however, it was possible to establish that the bottle was seven weeks old. It was then discovered that it had been sent to the hospital after it had already been stored for 19 days in the depot refrigerator, and that it had stood in the ward pantry at room temperature for over four weeks.

A venous sample was obtained from the patient and showed considerable haemoglobinaemia (approximately 100 mg. per 100 c.cm.). Her blood group was A, and differential agglutination showed no trace of surviving group O cells. No urine was passed from the beginning of transfusion until about an hour after the end; then a small amount of highly coloured acid urine was passed. This specimen, however, contained no albumin, no haemoglobin, and no casts. The patient was given large doses of alkali, and the next specimen of urine passed was strongly alkaline. A further venous sample was obtained two hours after the first one. The plasma still contained free haemoglobin, although the degree was less and there was much bilirubin. The patient never became obviously jaundiced, and no further sequelae were noted.

Case 11 : Fatal Reaction due to Transfusion of Infected Blood.—The patient was a woman aged 46 with a history of menorrhagia due to uterine fibroids. As a preparation for operation she was given a transfusion for the relief of her anaemia. Her blood group was O, and the transfusion of two bottles of concentrated cell suspension prepared from group O blood was begun. The transfusion was started at a rapid drip. After one to two minutes the patient said that her face was feeling hot; a few seconds later she complained of generalized discomfort. Her face was found to be very flushed, so the transfusion was stopped after only about 40 c.cm. had been given. The patient next complained of dyspnoea and developed a cough. She said that her head felt as if it were bursting. At this point a venous sample was taken because it was thought that incompatible blood might have been given. Soon afterwards she became worse. She developed abdominal pain and diarrhoea, and then started to shiver. Later she became very collapsed and developed a high pulse and temperature. Her condition deteriorated, and she died 12 hours after the transfusion.

Examination of the donor blood showed that it was grossly haemolysed and heavily infected with bacteria. It is important to note that this haemolysis was revealed only after a mixed sample had been centrifuged. Before transfusion, when the bottles of stored blood were inspected, the supernatant plasma appeared perfectly clear. It is well known that when haemolysis occurs in stored blood the diffusion upwards of haemoglobin into the plasma may only take place slowly. Examination of the venous sample obtained immediately after stopping the transfusion revealed the presence of a small quantity of free haemoglobin in the plasma, which could be accounted for by the amount of free haemoglobin injected.

Case 12 : Incompatibility Excluded by Cell-survival Test.—The patient was a male who had been severely burnt two days previously. He was transfused with 1,000 c.cm. of reputed group O blood. No direct matching was carried out. No donor blood remained for test, and the donors could not be traced. After transfusion the patient had a temperature of 109° F.; he died 10 hours later. A sample of blood was obtained from the body after death and found to be group A. The survival test indicated that there were approximately one million group O cells per c.mm. Thus incompatibility of the donor's cells could be excluded.

Summary and Conclusions

The diagnosis of a haemolytic reaction is based on evidence of increased blood destruction following transfusion and on the demonstration of a cause for this destruction. The commonest causes of severe haemolytic transfusion reactions at the present time are: (1) mistakes in blood grouping; (2) the use of Rh-positive blood for transfusion to recipients sensitized to the Rh agglutinogen; and (3) failure to maintain adequate standards in blood storage.

The investigation of haemolytic transfusion reactions is greatly facilitated if a sample of donor blood is kept available for investigation for at least 24 hours after the transfusion, and is further facilitated if a pre-transfusion sample from the recipient is also kept available for testing. When the patient is seen within 12 or 24 hours of transfusion the increased destruction can often be demonstrated by simply obtaining a venous sample from him and showing that it contains oxyhaemoglobin, methaemalbumin, or an increased concentration of bilirubin. When the patient is seen later the application of the method of differential agglutination is often the only way of demonstrating that the donor's red cells have been rapidly destroyed. Valuable additional evidence can often be obtained by demonstrating the presence of immune agglutinins in the recipient's serum.

It should be possible to diagnose the cause of practically all haemolytic transfusion reactions provided that investigations are initiated within a short time after transfusion, and provided that a sample of the transfusion fluid is available for testing. In practice, however, these conditions are often not fulfilled, and the cause of many haemolytic reactions is therefore never determined. It is considered that the full investigation of these reactions would be one of the most effective ways of raising the standard of blood transfusion.

I should like to thank Dr. J. F. Loutit for helpful criticisms and for kindly allowing me to publish the details of Case 10, which was chiefly investigated by him. I should also like to thank the various medical officers in charge of the other cases investigated for giving me access to their cases and for permission to publish the data reported here.

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Under arrangements made by the Ministry of Labour with the governors of Queen Mary's (Roehampton) Hospital the facilities of the latter organization are to be available for the supply of artificial limbs to adults needing them for useful employment. At the same time the Board of Education has given general sanction to education authorities, and the Ministry of Health to welfare authorities, to provide any necessary surgical treatment and artificial limbs for school children. The facilities of Roehampton and of other Ministry of Pensions hospitals are to be at the disposal of local authorities, whose expenditure will rank for grant. This information and the addresses of regional medical officers and of hospitals of the Ministry of Pensions are contained in a circular issued jointly by the Board of Education (No. 1624) and the Ministry of Health (No. 2796).

LEDERLE'S PERTUSSIS ANTIGEN IN TREATMENT OF WHOOPING-COUGH

REPORT OF AN INVESTIGATION

BY

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In 1940 Joslin and Christensen, having used Lederle's detoxified pertussis antigen in the treatment of a series of cases of whooping-cough, put forward the claim that, if given in sufficient dosage and at suitable intervals, it would shorten the duration of the disease and minimize the incidence of complications.

Methods of Present Experiment

In the investigation here reported there was a total of 20 cases, with an equal number of controls. The cases given antigen treatment were alternate cases admitted during the winter of 1941-2; the remainder constituted the controls. Each patient who received antigen had three injections, given at two-day intervals, consisting of 2 c.cm. of antigen intramuscularly.

The following observations were made in respect of all cases and controls: (1) Duration of stay in hospital. (2) Duration of period in which patient whooped during paroxysms of coughing. (3) Duration of period in which patient was subject to paroxysms of coughing. (4) Blood films made at intervals of 1 to 2 weeks to determine the percentage of lymphocytes. (5) Severity of disease, and complications, if any, noted.

Assessment of Cure.—Obviously it is not easy to determine exactly when a case of pertussis has ceased being so, and in this investigation patients were discharged when a good general condition associated with no coughing, whooping, or vomiting had been established. Nor can one describe the degree of severity of a particular case more accurately than by saying that it is mild, moderate, or severe. For these reasons the preceding observations were made in each case.

Results

The duration of stay in hospital is an approximate indication of the duration of the disease, as in few cases can the actual time of onset be ascertained. Consequently, as most cases were in the paroxysmal stage on admission, it was then that the therapeutic value of the antigen was investigated. The determining of the duration of the period in which the patient whooped during paroxysms of coughing was an attempt to assess the severity of the case, and it is probably true to state that, in general, the sooner whooping ceases the less severe is the attack of pertussis. The duration of the period when the patient had paroxysms of coughing only, constituted a further waning stage of the disease.

In comparing the average length of stay of antigen cases with controls we must consider them in these different respects. It will be seen from Table I that, except for the average duration of stay in hospital, the times of the antigen and control cases correspond quite closely, with the benefit slightly in favour of the latter. This indicates that the antigen did not decrease the time in hospital, nor did it lessen the severity of the disease.

TABLE I.—*Average Duration*

	Cases	
	Antigen	Controls
Stay in hospital	63 days	56 days
Experiencing paroxysms of coughing	58 „	54 „
Whooping during paroxysms of coughing ..	38 „	37 „

Age Incidence.—Pertussis is confined mainly to children under 5 years of age, and is most serious for those under 1 year. An analysis of the ages of cases in the present investigation provides the figures for Table II.

TABLE II

Age in Years	Number of Cases	
	Antigen	Controls
0–1	0	3
1–2	2	4
2–3	6	7
3–4	4	2
4–5	5	3
5+	3	1

Average age: Antigen cases, 3½ years; control cases, 2½ years.

The numbers in the different age groups correspond fairly well, for antigen and control cases, and it is to be noted that the control cases were on the average one year younger. So the age factor does not compensate for the longer duration or the greater severity of the antigen cases.

Severity of Cases.—Cases may be divided roughly into three grades: mild, moderate, and severe. Any case which experiences a spasmodic cough without whooping or vomiting may be classed as mild. The moderate case would have a few whoops superimposed on the spasms of coughing, and the severe case would be liable to attacks of vomiting as well as whooping and coughing. Though patently a very approximate method of assessment, it is of value in showing the distribution and severity of cases, as in Table III. The controls have the greater number of severe cases, which again is of discredit to the antigen.

TABLE III

	Number of Cases	
	Antigen	Controls
Mild	4	2
Moderate	6	4
Severe	10	14

Incidence of Complications.—In this investigation 5 of the antigen and 4 of the control cases developed one or more of the usual complications. Table IV analyses these complications, and of the more serious ones—bronchopneumonia and convulsions—antigen and control cases each had a total of 4. The numbers are too small for it to be said that the use of antigen prevented or minimized the complications.

TABLE IV.—*Type of Complication*

	Number of Cases	
	Antigen	Controls
Bronchopneumonia	4	2
Convulsions	0	2
Diarrhoea	1	3

Lymphocyte Percentage in Blood Films

Differential white blood cell counts were performed at intervals of one or two weeks on all patients, to determine the manner in which the antigen affected the lymphocyte percentage; the results were examined in the following two ways.

In the first method a graph was drawn for each case by plotting lymphocyte percentage against time in days. Should the lymphocyte percentage decrease as the disease wanes, the resulting graph would be a decline. There are two main forms which the graph could otherwise adopt—namely, an incline in the opposite direction and a level trend. Table V analyses the trend of the graphs.

TABLE V.—*Trend of Graph*

	Number of Cases	
	Antigen	Controls
Decline	11	12
Level	1	1
Incline	1	2

The figures are almost identical in both antigen and control cases, showing that the administration of the antigen did not affect the percentage of lymphocytes in the blood. It is to be expected that the lymphocyte percentage would, in a case

treated by ordinary methods, approximate to its normal level as the disease diminishes, but Donald (1938) found that relative lymphocytosis persisted even to the ninth week of disease in 50% of cases. This observation would account for those cases which were not in agreement with the "decline" form of graph.

In the second method of examination of the lymphocyte percentage, the average lymphocytosis during the course of the disease was calculated for both antigen and control cases. The figures were 64% for the former and 68% for the latter. Here again no appreciable difference existed between the two groups.

Sauer (1933) and Daughtry-Denmark (1936), as a result of lymphocyte percentage counts taken during prophylaxis of children with pertussis vaccine, found that the figures were raised as in cases of pertussis. The antigen in the present investigation does not appear to have affected the course of the lymphocytosis either quantitatively or qualitatively, and it is reasonable to expect that the former, at least, should have occurred.

Discussion

From the foregoing results it is apparent that the antigen employed as a therapeutic agent in this investigation did not shorten the duration of the disease, render it less severe, or reduce the incidence of complications. Space does not permit a detailed comparison of results with those obtained by Joslin and Christensen, but it may be noted that the dose of antigen we gave was that advocated by them, and the average ages of patients in both experiments are comparable. As those workers did not include the criteria by which they assessed their cures a reliable comparison of the average duration of the two series is not possible. Among their list of complications they included bronchitis, which is not generally accepted as such but is considered an accompaniment of pertussis. By omitting these cases their complication rate can be revised, as follows:

Original percentage :	*Revised percentage :*
Antigen, 0.6%;	Antigen, 0.4%;
Control, 18.0%.	Control, 8.0%.

Thus the complication rate of their control cases appears less serious.

In the present investigation 17 out of 20 cases which received antigen were in the paroxysmal stage when admitted. It has been suggested by some workers that vaccines used in the treatment of pertussis must be given in the catarrhal stage to be effective. This remains to be proved for the antigen, and certainly merits attention.

The three cases in the catarrhal stage when injected were in hospital for 76, 60, and 33 days respectively, which figures do not suggest that any amelioration of the disease resulted from use of the antigen.

Summary

Twenty cases of pertussis treated with an antigen are compared with a similar number of controls.

Duration of the disease, complication rate, and lymphocyte percentage were not appreciably affected.

The results of this investigation are briefly compared with those of a similar experiment and discussed.

I wish to acknowledge the permission of the Medical Officer of Health of the London County Council to publish these results, and to thank Chas. F. Thackray Ltd., Leeds, for a generous supply of Lederle's detoxified pertussis antigen.

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Sarsaparilla has been used as a remedy for over 300 years, and since the earliest colonial settlement in America it has found favour there as a tonic drink. During the past 50 years there has been an extensive literature on the saponins of sarsaparilla, and according to F. M. Thurmon (*New Engl. J. Med.*, 1942, **227**, 128) only one definite saponin—sarsasaponin—has been isolated from any of the varieties of sarsaparilla. Thurmon has used sarsasaponin in the treatment of psoriasis, and found that it had a beneficial effect on 62% of the 75 patients he treated.

GASTRO-DUODENAL SURGERY IN THE AGED

BY

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With the ever-increasing progress made—perhaps even more along the lines of pre-operative preparation, anaesthesia, and post-operative care than in actual technique—certain major procedures can now be undertaken at an age which in the past would have been considered prohibitively high. Needless to say, with age and its increased incidence of respiratory infections, cardio-vascular degeneration, prostatic obstruction, and so forth, one does not perform major operations without strong indications, but when those indications are present it may be unfair to the patient to make the number of his years the sole factor which denies him the benefits of surgery.

Chronic and frequently relapsing gastric or duodenal ulcers, both of which heal less readily in the aged, and carcinoma of the stomach, or their complications, all form occasional indications for surgery in the later years of life.

Gastro-duodenal Perforation

Acute perforation of peptic ulcer or carcinoma is an absolute indication for surgery. Of 83 such operations performed by me since 1936, 18 were on patients over the age of 60, and 6 over 75. In a series of 5,740 gastro-duodenal perforations taken from the literature by Sandell (1936) only 57 patients were over the age of 60, and the oldest was aged 77. In the same communication Sandell recorded the recovery of a patient of his own, aged 82, after suture of a juxtapyloric perforation.

In my series of 18 patients of 60 and over, two were cases of perforated carcinoma of the stomach. One of these, aged 70, died after simple closure of the perforation; the other, aged 61, made an excellent recovery after an emergency gastrectomy—an operation which seemed advisable because the carcinoma was also causing obstruction. Of the remaining 16 patients with simple perforation three were aged 79 and two 77. One 79-year-old lady with a duodenal perforation of 4½ hours' duration recovered after closure of the perforation under local anaesthesia (this being the second oldest case of perforated ulcer on record to recover). One of the 77-year-old patients also made a good recovery. Of the whole 16 patients with simple perforation 10 died. On closer investigation it becomes apparent that failure to send the patient to the surgeon early, rather than age, was the factor which caused the high mortality. Of the 8 seen and operated on under twelve hours from the time of perforation six made a complete recovery and two died, four weeks and six weeks after operation, from bronchopneumonia and cerebral thrombosis respectively. With such delay the figures could hardly have been much better in youthful patients. It is obviously well worth while to operate on these aged patients if they are presented in reasonably early hours after perforation. No doubt the possibility of peptic perforation does not suggest itself so readily to the practitioner when he is confronted with an aged patient, often with intercurrent ailments and a long history of pain.

Another case—the oldest case of duodenal perforation, and possibly of duodenal ulcer, on record—came to my notice for the first time in the post-mortem room.

A feeble lady aged 91 was admitted to a "chronic ward" on June 8, 1936, complaining of general weakness and occasional lower abdominal pain, with loss of weight. Her abdomen was rather guarded, but presented no other abnormal physical sign. There were pressure sores on the heels and moist crepitations at the bases of both lungs. She became steadily weaker, and had occasional abdominal discomfort until June 17, 1936, when she complained of pain in her chest just before midnight. She collapsed later, and died at 8.15 a.m. the next day.

Post-mortem examination, performed by Dr. Allen B. Bratten, disclosed a general sero-fibrinous peritonitis with two pints of free fluid. On the anterior wall of the duodenum 1.5 cm. beyond the pylorus was an ulcer 1 cm. in diameter, perforated in its centre. Another larger ulcer was present on the posterior wall of the duodenum.

Ante-mortem thrombosis of the left common iliac vein was present, with a recent embolus at the bifurcation of the pulmonary artery and an older adherent thrombus in the left branch. There was generalized arterial atheroma.

Histological examination showed the typical appearance of a chronic duodenal ulcer.

Gastric Carcinoma

Carcinoma of the stomach affords the commonest indication for gastric surgery in the aged. During the past three and a half years I have explored 61 cases of carcinoma of the stomach apart from the two perforated ones described. Of these a radical partial or total gastrectomy was performed in 30, of whom 21 were over the age of 60 and 9 were 70 or over. Of the 9 patients under 60 all but one (a case of palliative total gastrectomy) recovered. Of the 12 between 60 and 70, 10 recovered; and of the 9 over 70, 6 recovered. The 3 over 70 that died were a lady aged 71 who had undergone total gastrectomy (she had carcinoma of 2 cm. of the lower oesophagus and cardia), a patient aged 75 with syphilitic aortitis who had undergone partial gastrectomy, and a man of 70 who developed a cerebral thrombosis.

Among patients whose growths were found irremovable, and on whom only a palliative gastric transection or short-circuit or nothing at all was done, the mortality was higher than in those who had had a gastrectomy—a feature which makes even a palliative gastrectomy justifiable from the patient's point of view.

An 80-year-old partial-gastrectomy patient merits a short note, as he must be one of the oldest patients to survive this operation.

This 80-year-old man was admitted to St. James Hospital on Aug. 5, 1941, complaining of abdominal pain in the evenings, accompanied by vomiting, with anorexia and loss of weight for two months. He was pale and wasted, and had visible gastric peristalsis. Barium-meal radiographs and gastroscopy confirmed the pyloric stenosis, though its actual pathology could not be determined. His condition was improved a little by rest and gastric lavage, though he still had a 48-hours gastric residue of barium. On Sept. 11, under local anaesthesia, a mid-epigastric incision was made. A carcinomatous ulcer of the pyloric canal with infiltration of the right and left gastric and subpyloric glands was discovered, and was treated by radical retrocolic partial gastrectomy—well wide of the tumour and including all the obviously infected glands. Subsequent histological examination showed a trabecular polygonal-celled scirrhous carcinoma of the stomach (" leather-bottle " type). The patient made a good recovery apart from an attack of prostatic obstruction which was treated by suprapubic cystotomy. In Dec., 1942, he still remained active and well, with no sign of recurrent growth.

According to the recent survey of the operations of total gastrectomy by Joll and Adler (1942), the oldest patient to survive this procedure was a man aged 72, recorded by Waugh and Giffin (1941). A description of my successful total gastrectomy for a patient aged 74 may be of interest.

A moderately well nourished man of 74 was admitted to St. James Hospital on Sept. 6, 1942, with a history of two years' periodic mid-epigastric pain two or three hours after meals. His appetite was good. Barium-meal examination on Sept. 8 suggested a duodenal ulcer, and the patient was sent home for three weeks' bed-rest and ulcer diet. On his return he felt much improved and radiography revealed a normal duodenum, but in view of an inconsistent fractional-test-meal curve, which showed a very low free and a high total acidity, I gastroscoped him. An ulcer was revealed, extending from as high as could be seen on the lesser curvature, with a slightly raised and " gelatinous "-looking margin, and a base which appeared to be alternately fibrotic and superficially ulcerated, reminding one of a rodent ulcer. The diagnosis was carcinoma of the superficial spreading type (Stout, 1942).

On Oct. 20, under local anaesthesia, a long mid-epigastric incision was made. A rather flat carcinomatous ulcer was felt on the lesser curvature of the stomach extending as high as the cardia. There were a few hard glands on the upper part of the greater and lesser curvatures. A radical total gastrectomy was performed, removing lesser omentum, right and left gastric vessels and glands, and gastro-epiploic arch. The resection included 2.5 cm. of duodenum and 3 cm. of oesophagus. Termino-lateral oesophago-jejunostomy was performed, using two rows of continuous catgut suture, with a few extra stitches from adjacent diaphragmatic peritoneum to jejunum to give support. The long jejunal loop was short-circuited to prevent distension of the duodenum, and a feeding jejunostomy was made. The patient's condition was good, and it remained so throughout the whole post-operative period. Jejunostomy feeds were given from the day of operation, but mouth-feeding was not begun until the fifth day, when the jejunostomy tube was removed. On his discharge on Nov. 21 he could take porridge, an egg, two slices of bread-and-butter, and a cup of tea for breakfast with no discomfort.

Histological examination of the specimen showed a solid acinar polygonal-celled and tubular cuboidal-celled mucous carcinoma of the stomach.

Chronic Peptic Ulceration

In comparison with the frequency with which advanced lesions are found to require surgery in the young and middle-aged, uncomplicated gastric or duodenal ulcers do not often need it at great ages. No doubt this is in part due to the fact that the possession of a chronic peptic ulcer is not conducive to longevity. Of 266 operations personally performed for benign non-perforated ulcer during the last three and a half years, 40 were on patients between the ages of 60 and 76. Generally speaking, with the natural tendency to thinning of the gastric mucosa and diminution of gastric acidity with advancing years, which is accelerated by the retention gastritis associated with duodenal stenosis or pylorospasm and the correspondingly diminished risk of anastomotic ulceration, it is usually safe to perform short-circuiting operations in patients in this age group. Of these 40 operations, 15 were for duodenal ulcer, of which only two were gastrectomies. One other patient, aged 68, had a gastro-jejunal ulcer: this is always best treated by gastrectomy, which was done. The remaining 24 had gastric ulcers, most of them complicated by complete penetration, stenosis, or multiple ulceration; 17 were treated by gastrectomy and 7 by gastro-jejunostomy. Although gastrectomy, after adequate preparation, is the ideal operative solution for gastric ulcer at any age, some of the aged and feeble patients, whose ulcers are associated with marked delay in emptying, may improve greatly in comfort and nutrition after a gastro-jejunostomy.

Of the 20 (aged from 60 to 74) undergoing gastrectomy 17 recovered. Of the 20 (aged from 60 to 76) who had short-circuiting operations 16 recovered. The 7 deaths were due to cerebral thrombosis (1 case), pneumonia (2 cases), anaemic necrosis of colon from caecum to rectum—due to a combination of post-operative colonic distension and atheroma of the mesenteric vessels—(1 case), obstruction from adhesion to the cut end of the ligamentum teres (1 case), and repeated vomiting after anterior gastro-jejunostomy (2 cases).

The mortality from gastro-jejunostomy is high, but it must be remembered that all these lesions were the worst of their type, incompatible with any further span of comfortable existence; nearly all were completely penetrating ulcers associated in most cases with varying degrees of gastric retention in very aged patients, and all had had a very prolonged trial of medical treatment. The anterior gastro-jejunostomies, which were done because of severe destruction and adhesion of the posterior wall of the stomach, gave great anxiety from the tendency to recurrent vomiting, and, though I have occasionally found the operation give an excellent result, on the whole would strongly advise against it. The aged patient will not often stand a convalescence associated with too much vomiting or too prolonged continuous gastric aspiration, which the vomiting necessitates.

Preparation for Operation

The success or failure of a gastro-duodenal operation is largely decided before the patient reaches the operating theatre. It has been demonstrated that there is a direct relation between the prognosis of pentic ulcer operations and the antecedent loss of weight (Studley, 1936).

Patients with an ulcer of such severity as to require surgery often have a background of months or years of undernutrition resulting from fear of pain after food, vomiting, self-inflicted diets, or actual obstruction. On admission they are fatigued and depressed by their latest relapse. They require a preliminary course of feeding on a high-quality diet and rest in bed, partly to increase their resistance to infection and their powers of wound healing (Whipple, 1940), partly to bring the ulcer into as quiescent a stage as possible; also to diminish the gastritis associated with incomplete emptying of the stomach. A high-protein diet diminishes the time-lag before healing of the wound begins (Waugh, 1941). Adequate amounts of ascorbic acid are essential for the formation of collagen fibres and for wound repair (Hunt, 1941). Intravenous saline

may be required if dehydration cannot be corrected by the oral route. Bed-rest is essential to produce quiescence of the ulcer and so enable the patient to absorb the food he is given. When there is delay in emptying, daily gastric lavage will often considerably reduce the emptying time, with consequent nutritional improvement.

Anaemia as a result of occult or obvious bleeding from the lesion, or of nutritional deficiencies, is often present, and can usually be corrected by the oral administration of ferrous salts. If this fails, or in the more urgent carcinoma cases, blood transfusion may be required.

The mouth should be cleaned by washes, tooth-cleaning, and scaling—extensive dental extractions should be undertaken only in the more quiescent cases in which there will be time to regain a comfortable and clean mouth well before operation. Breathing and regular limb exercises should be carried out before and after operation. The patient should refrain from smoking for 48 hours before operation.

Prophylactic Sulphapyridine

In May, 1941, I decided to try the use of sulphapyridine by mouth as a prophylactic against pulmonary and peritoneal infection in all gastrectomy cases. The effect was striking. In the 18 months prior to that time there were four fatal primary infections in under a hundred gastrectomies—one case of peritonitis in a completely penetrating ulcer case which was shown at necropsy to have watertight suture lines, two lobar pneumonias, and one confluent bronchopneumonia. In 18 months since then I performed 120 partial gastrectomies for simple ulcer with only one death. These were not selected cases: 6 of the patients had gastro-jejunal ulcers; 20 had multiple ulceration; 42 had complete penetration with the ulcer base in pancreas, liver, or colon; many were stenosed; and their ages ranged up to 74. There were some chest infections in the series, mostly moderate degrees of bronchitis in old bronchitic subjects, and one basal collapse.

Among 14 gastrectomies for carcinoma in the same period there were three deaths—syphilitic aortitis (aged 75), post-operative collapse (aged 68), and leak from a feeding jejunostomy in a total gastrectomy—but none from primary infection. The only severe wound infection occurred in a patient who required colonic resection as well, but he recovered from it. There were a number of minor wound infections.

Anaesthesia

The anaesthetic is of paramount importance. The elderly patient is usually co-operative and not very apprehensive, and forms the ideal type for local anaesthesia. He certainly appears and feels less exhausted after a local than after a deep ether anaesthesia. High spinal anaesthesia is often contraindicated by the presence or suspicion of cardiovascular degeneration. Of all general anaesthetics cyclopropane seems to cause the aged patient the least distress. My preference, however, is for local anaesthesia, and I use either a combination of rectus-sheath block and anterior splanchnic anaesthesia (Braun) or intercostal block with posterior (Kappis) splanchnic anaesthesia. When injecting the splanchnic plexus by the anterior route in the aged care should be taken not to press on an atheromatous aorta or displace it too roughly.

Post-operative Period

For 24 hours after operation the aim is to rest the temporarily paralysed intestine, and so we give by mouth only the little water or fruit juice necessary to enable the patient to take the sulphapyridine comfortably. Fluid is administered by slow rectal drip—tap-water or saline-and-glucose solution. High-quality protein is given in the form of skim-milk, egg, etc., as soon as possible. Boiled sweets to suck or sugar with drinks supply the carbohydrate requirements. Blood transfusion is not given as a routine during or after the operation, though it may be required in rare cases.

Breathing and leg exercises are restarted as soon as the patients recover from their post-operative sleep. When necessary they are instructed to clear their air passages by coughing.

Summary

A case of duodenal ulcer perforation at the age of 91, and cases of recovery from duodenal perforation at 79, from total gastrectomy at 74, and from partial gastrectomy at 80, are recorded.

A series of 120 partial gastrectomies for gastric, duodenal, and gastro-jejunal ulcers with one death is recorded, a result which is attributed in part to the use of prophylactic sulphapyridine.

The causes of death in aged patients after major gastro-duodenal procedures are recorded.

My thanks are due to Dr. W. Allen Daley, Medical Officer of Health to the County of London, and Dr. Norman S. Craig, medical superintendent of St. James Hospital, for permission to publish this paper. Dr. E. W. Glennie has given me great help in anaesthetic problems. I must also acknowledge the great nursing skill displayed by Sister B. Dodsworth and Sister M. Ridgeway while these fragile patients were under their care.

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INCIDENCE OF PULMONARY TUBERCULOSIS OF ADULT TYPE IN THE R.A.F.

RESULTS OF MASS RADIOGRAPHY OF 75,000 CASES

BY

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The object of this article is to give a detailed analysis of the age incidence and types of case discovered by mass radiography and to discuss the problems which will arise in dealing with these and other cases so discovered in the future. The work of the tuberculosis and health services generally will be considerably increased when mass chest radiology becomes a national undertaking, but it is only by utilizing to the full this recent and valuable addition to our methods of investigation that we can hope to get a real and lasting improvement in the incidence of pulmonary tuberculosis in this country.

As might be expected in a first examination there are wide variations in the extent and degree of activity in the cases discovered, and when running a mass chest *x*-ray unit one is impressed by finding how far advanced some of the active sputum-positive cases have become without any complaint having been made to the medical officer by the airman or airwoman. It may be that to a certain extent a young man who is keen to serve his country conceals his symptoms; but this in itself makes it all the more necessary that men and women in the Services, and the public generally, should have a periodic routine chest *x*-ray examination. It is wishful thinking to expect a majority of early cases at once, before the more advanced cases have been discovered in the preliminary surveys.

Active Cases

Let us first consider the active cases of pulmonary tuberculosis discovered in 75,000 cases, 65,000 of which are airmen

Airmen (65,000): Unilateral Pulmonary Tuberculosis

	Age Group:	18–19	20–24	25–29	30–34	35–39	40–45	Total
Sputum positive	With symptoms	6	6	2	1	6	1	22
	Without symptoms ..	2	1	2	0	1	0	6
Sputum negative	With symptoms	13	18	1	4	3	1	40
	Without symptoms ..	14	16	1	3	0	0	34

Airmen (65,000): Bilateral Pulmonary Tuberculosis

	Age Group:	18–19	20–24	25–29	30–34	35–39	40–45	Total
Sputum positive	With symptoms	14	7	2	1	4	2	30
	Without symptoms ..	1	1	1	0	1	0	4
Sputum negative	With symptoms	7	14	3	7	5	1	37
	Without symptoms ..	12	7	1	1	2	0	23

W.A.A.F. (10,000) : Unilateral Pulmonary Tuberculosis

	Age Group:	18–19	20–24	25–29	30–34	35–39	40–45	Total
Sputum positive	With symptoms	0	0	0	0	0	0	0
	Without symptoms ..	0	1	0	0	0	0	1
Sputum negative	With symptoms	2	1	0	1	0	0	4
	Without symptoms ..	6	6	0	0	0	0	12

W.A.A.F. (10,000) : Bilateral Pulmonary Tuberculosis

	Age Group:	18–19	20–24	25–29	30–34	35–39	40–45	Total
Sputum positive	With symptoms	0	0	0	0	1	0	1
	Without symptoms ..	1	1	0	0	0	0	2
Sputum negative	With symptoms	3	2	0	0	0	0	5
	Without symptoms ..	8	4	1	0	0	0	13

and 10,000 of which are W.A.A.F. Our criterion of activity is a strict one, and the patient suspected has a large radiograph, a full clinical examination, blood sedimentation, exercise, and sputum tests, and observation in station sick quarters before such a diagnosis is arrived at. In doubtful cases the film is referred to headquarters for further opinion. The patient is closely questioned as to the presence or absence of symptoms. The accompanying tables analyse the active cases discovered.

From these tables it can be seen that there are altogether 29 unilateral and 37 bilateral sputum-positive cases. Owing to time and present laboratory facilities we have to restrict ourselves to three simple examinations of a sputum smear by the Ziehl-Neelsen method, and on further tests and by concentration methods this would probably be very considerably higher.

In order further to analyse the types of disease discovered by mass radiography, appended below are tables of the radiographs which definitely suggest vomica formation as opposed to infiltration only.

		Airmen	W.A.A.F.	Total
Unilateral	Infiltration only	76	11	87
	Infiltration and cavitation ..	26	6	32
Bilateral	Infiltration only	67	14	81
	Infiltration and cavitation ..	27	7	34

It is rather alarming to note that 66, or approximately 28%, of these so-called "fit" individuals discovered to have active pulmonary tuberculosis have already reached the stage of cavity formation. Out of these cases 32, or nearly 50%, have returned a positive sputum.

Let us now, for the sake of argument, say that among the active cases all the sputum-positive and all the sputum-negative cases discovered with symptoms will require a sanatorium bed. To start with, this brings us to a total of 152 cases in 75,000, or approximately 2 beds per 1,000 individuals radiographed. It is my opinion that in a mixed civilian population the incidence will be considerably higher, as all people who have entered the Service have been examined and passed by a medical board ; and also, as the civilian sets will probably be distributed in selected industrial areas where the incidence of pulmonary tuberculosis is highest, it will probably work out to more like 3 beds per 1,000.

It is hoped, and anticipated, that a considerable proportion of these cases, having been discovered in an early stage, will be suitable for artificial pneumothorax, which after preliminary induction in a sanatorium can be continued at the local tuberculosis dispensary. By a scheme which will probably be brought in by the Government, at first the patient can be partially re-employed in industry, with compensation for the time that he is unable to work, thereby causing a minimum economic upset to himself or herself and the family as a whole.

Sputum-negative Cases without Symptoms

Let us now consider the unilateral sputum-negative cases without symptoms whose radiographs, clinical signs, and B.S.R. suggest active infiltration without cavitation. Should all these cases be immediately admitted to sanatorium with a view to collapse therapy? The answer is undoubtedly "No." In these cases the patient usually appears to be very fit, and the radiological appearances are probably due to an exudative response to a very small number of bacilli. A somewhat similar appearance can also result transiently from a low-grade apical pneumonia. If, therefore, the patient is under dispensary observation and is radiographed at two-monthly intervals for the first year, no harm should come to him. If at any stage there appears to be extension, then sanatorium treatment should be advised. It is suggested that in the younger age groups so discovered the individual should be re-radiographed six-monthly for two years, then annually for three years. If the patient is then written off the dispensary books he will be given due warning, should any symptoms arise, to report first to his local practitioner.

The bilateral symptomless sputum-negative cases are a debatable problem. It is my opinion that they should, if the bed situation permits, have a preliminary period of sanatorium observation and treatment, particularly with a view to instructing the patient in after-care ; but this will have to be left to the discretion of the local tuberculosis officer.

With regard to the persistently sputum-positive cases it is most necessary that the general practitioner should, from the point of view of public health, continually stress to the patient the necessity for correct disposal of sputum, use of his own eating and drinking utensils and towels, and the like, as it is upon the practitioner who sees the patient weekly or fortnightly that this big responsibility rests. A three- or six-monthly visit to the dispensary does not sufficiently impress the patient, who is inclined to become careless as the years go by. This type of patient should never be re-employed in an indoor industry, however well he may feel in himself, except in a light sedentary clerical job where he has an office to himself. The fact that a patient has become temporarily sputum-negative is no guarantee that he will not again become sputum-positive under conditions of stress. One envisages that in the future there may be some form of industrial segregation of this type of case in the big industrial areas so that they can be usefully employed in indoor industry. It is only by such bold measures that we can hope to tackle efficiently the problems before us.

Inactive Cases

The unilateral and bilateral cases of inactive disease have not been analysed in such detail, but in order to give some idea of the incidence the table below is included. This refers to parenchymatous disease, calcified or fibrotic, including healed Assmann type of foci, but does not include Ghon's foci or calcified hilar glands.

Incidence of Inactive Pulmonary Tuberculosis

	65,000 Airmen	10,000 W.A.A.F.	Total
Unilateral	248	40	288
Bilateral	82	17	99

The majority of these patients are kept as useful members of the Service, in a lowered category, unless the extent of affected lung is such that in spite of the apparent healing it is considered that the airman or airwoman is liable to break down under conditions of stress. A problem that here arises is whether the patient should be told that he has any pulmonary abnormality. It is my opinion that if the disease is unilateral and calcified he should not be told ; but if bilateral, or if there is evidence of infiltration other than calcification, he should be warned to report if any symptoms arise.

A number of these cases may require dispensary observation for a time, and it is a matter for the tuberculosis services to decide what extent of disease will require further observation. Up to the present well under 1% of our cases classed as inactive have broken down since their preliminary radiograph, but as these units have been working for only one year it is rather early to make a dogmatic statement.

Conclusion

I would add that the views expressed are by a medical officer who spent several years as a tuberculosis officer prior to enlistment, and is now fortunate enough to be in charge of a miniature chest radiography unit in the Royal Air Force. My thanks are due to Wing Commander R. R. Trail for his help, and to my colleagues running the other units, without whose co-operation I should have been unable to produce these statistics.

Medical Memoranda

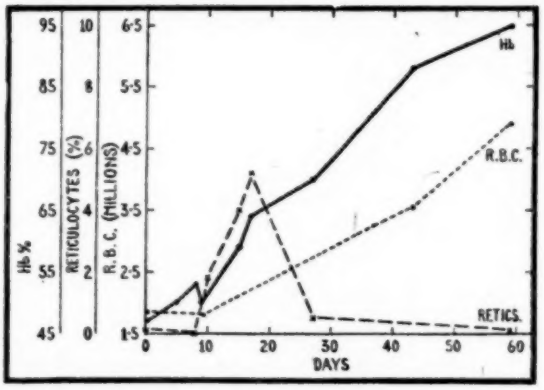
Pernicious Anaemia treated with Pyloro-duodenal Extract and Liver in Tablet Form

Parenteral liver therapy is occasionally complicated by severe reactions. These may take the form of local pain or general effects such as headache, flushing, urticaria, dyspnoea, and even collapse. They are usually overcome by injecting minute doses of liver extract—1/250 c.cm., 1/25 c.cm., and 1/2 c.cm.—at intervals, together with adrenaline. A nervous patient, upset by the reaction, may refuse further injections, and in such a case resort must be had to an oral preparation. An order made by the Minister of Health prohibits the oral use of liver extract as such, but in this preparation the liver is unextracted. It was tested on the following untreated case of pernicious anaemia.

Case History

The patient, a woman of 76, was admitted to hospital during an air raid in a state of nervous prostration, her house having been bombed. On recovery she complained of left-sided headaches, which, she stated, had been present for the past six months, occurring in attacks lasting several days at a time. During the last few weeks she had also been subject to fainting attacks. On examination she was found to be a thin pale woman. Her memory was much affected and she had no recollection of her recent misfortune. The right pupil was fixed and irregular, reacting neither to light nor to accommodation. The media of both eyes were opaque. The conjunctivae and mucous membranes of the mouth were pale. Blood pressure was 120/80. The spleen was not palpable, but the splenic dullness was increased. The knee- and ankle-jerks were absent and the calves were more tender than normal. The other systems showed no abnormal physical signs. Blood count: red cells, 1,720,000; Hb, 47%; C.I., 1.38; leucocytes, 2,000—polymorphs 45%, eosinophils 1%, basophils 2%, lymphocytes 48%, monocytes 4%. The red cells were large and showed marked anisocytosis and some poikilocytosis. Reticulocytes amounted to 0.1%. A histamine test meal revealed complete achlorhydria. The patient was given 4 tablets of binaemon three times a day. This was equivalent to a daily dose of 6 g. of fresh liver and 3 g. of fresh pylorus.

Progress.—The effect on the blood picture is shown in the accompanying chart. The reticulocyte crisis did not start till the



eighth day, and was small, reaching only 5% maximum, but the rise in the red cell count and in haemoglobin was fairly rapid. By the end of the fourth week the red cell count had risen by 2,000,000, and by the seventh week had reached 4,000,000. This is similar to the recovery rate met with when raw liver is used but slower than that produced by parenteral liver extract, which raises the count to 4,000,000 in about a month. Normal figures were finally reached in the eighth week.

Conclusions

This preparation of liver and pyloro-duodenal extract in tablet form was found to be effective in treating pernicious anaemia. The difference in cost between this and parenteral treatment is not great. With the latter, assuming that initial doses of extract corresponding to 300 g. of liver are spread over the first 4 days and followed by weekly doses equivalent to 100 g. till the blood count is normal, as recommended by Murphy (1939), the cost of the treatment would be approximately 17s. at hospital prices, as compared with 23s. for the oral method.

My thanks are due to Dr. Allen Daley, Chief Medical Officer to the London County Council, for permission to publish this paper, and to Organon Laboratories Ltd. for supplies of binaemon tablets.

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Glandular Fever

The article by Drs. J. Shafar and J. C. R. Weir (*Journal*, Feb. 20, p. 218) on a case of glandular fever with a meningeal reaction raises a number of points of interest at the present moment, when there appears to be an increase in the incidence of infectious mononucleosis. Those authors refer to the general characteristics of their series of some 200 cases. In particular they stress the benign nature of the condition, its marked infectivity, and the unreliability of the Paul-Bunnell reaction. They also state that in differential white cell counts of the blood the polymorphonuclear leucocytes totalled some 50%, and that the remainder was made up of small and large lymphocytes with an average of 10% of monocytes.

During the past few months we have admitted to the County I.D. Hospital here two patients whose cases are fully reported below. These cases closely resemble each other, and were regarded as examples of a clinical entity conforming to the classical description of glandular fever. It will be seen, however, that they differ widely from the cases of Drs. Shafar and Weir in certain important respects. These are: (*a*) The course of the illness was by no means benign. Both patients were sharply ill with intermittent pyrexia, of 14 days' duration, which reached 103.8° F. in one instance and 102.0° F. in the other. (*b*) Infectivity was apparently not pronounced. Both were single cases which occurred separately under Service conditions, and no other cases were reported. Haematological investigation of attendants was not carried out, but none showed any clinical signs of infection. (*c*) The Paul-Bunnell test in both cases was positive in high dilutions. (*d*) The differential white cell counts of the blood showed much higher degrees of mononucleosis, the combined percentages of lymphocytes and monocytes reaching as high as 82. (*e*) There was marked faucial involvement.

It is felt that these considerations help to strengthen the opinion expressed by Drs. Shafar and Weir that there may be "separate and distinct varieties of glandular fever."

Clinical History of Two Recent Cases

Case 1.—A man aged 21 was admitted on July 29, 1942, with a history of headache, shivering, malaise, and abdominal pain of 4 days' duration. On examination he was found to have a temperature of 102.6° F. and a pulse rate of 106. There were no other positive clinical findings, but, in view of his severe headache, lumbar puncture was performed. Clear fluid was obtained, not under pressure, and laboratory investigation showed no departure from normal. A blood count taken on admission gave a total of 5,000 white cells per c.mm.—polymorphonuclear leucocytes 54%, lymphocytes 41%, and monocytes 5%. Blood culture proved negative, and a Widal reaction revealed only slight H-agglutination, which was disregarded as resulting from inoculation. Pyrexia was intermittent, and on Aug. 3 the patient complained of sore throat. He was then found to have a greyish membrane on both tonsils. This separated easily without bleeding, and a throat swab was negative for *Corynebacterium diphtheriae*. Next day non-tender enlarged glands were observed in neck, axillae, and groins, and there was a morbilliform rash on the abdomen. By this time the leucocytes consisted of: polymorphs 32.5%, and lymphocytes and monocytes together 67.5%, with a total white cell count of 11,300 per c.mm. The Paul-Bunnell test was positive with a titre of 1 : 896. By Aug. 5 the patient was acutely ill, with a high temperature, rapid pulse, and an extension of the tonsillar membrane and the rash. On this day the white cells numbered 26,000 per c.mm.—polymorphonuclear leucocytes 29%, lymphocytes 22%, and monocytes 49%. He remained very ill for three days and then rapidly improved, with recession of all symptoms. He was discharged well on Sept. 15.

Case 2.—A man aged 22 developed severe headache on Oct. 10, 1942, with nausea and anorexia, and noticed a transient rash, apparently of erythematous type, on both forearms. He reported sick on Oct. 19 and was admitted to sick quarters the same day. He was found to have an irregular pyrexia, reaching on occasion 102° F., and by Oct. 24 he had painless glandular swellings in neck, axillae, and groins. The patient was now admitted to hospital here, and was found to have, in addition, marked faucial congestion, with patches of loose exudate on both tonsils. His blood picture on admission was: polymorphonuclear leucocytes 18%, lymphocytes 70%, and monocytes 12%, with a total white cell count of 16,200 per c.mm. The Paul-Bunnell test was positive with a titre of 1 : 640. Next day he complained of severe headache, and lumbar puncture was performed. The cerebrospinal fluid was normal in all respects. On Oct. 29 the tonsillar membrane had extended, and the white cells numbered 15,200—polymorphs 19%, lymphocytes 75%, and monocytes 6%. The pyrexia subsided on Nov. 1, and the patient subsequently improved rapidly. He was discharged well on Nov. 21.

I am indebted to Dr. J. L. Horne, M.O.H., for permission to report these cases, and to Dr. C. C. McCallum, R.M.O., for help in the preparation of the clinical notes.

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Reviews

EPILEPSY

Epilepsy and Cerebral Localization. A Study of the Mechanism, Treatment, and Prevention of Epileptic Seizures. By Wilder Penfield, M.D., D.Sc., and Theodore C. Erickson, M.Sc., M.D. Chapter XIV by Herbert H. Jasper; Chapter XX by M. R. Harrower-Erickson. (Pp. 623; illustrated. 44s.) London: Baillière, Tindall and Cox.

In *Epilepsy and Cerebral Localization* Drs. Wilder Penfield and Theodore Erickson set out, as they confess in the preface, to write a book on focal epilepsy. Being struck, however, with the similarity of the mechanisms in cryptogenic and symptomatic epilepsy they were eventually led into a general discussion of the whole problem. The result is a book of somewhat uneven texture. Much of it is of the greatest value, in particular the chapters on functional localization in the cerebral cortex and seizure patterns and their cerebral localization, in which are described numerous observations upon the excitation of fits during operations upon the brain and the correlations noted between such induced attacks and the spontaneous seizures from which the patients had suffered. The production of seizures by surgical lesions of various kinds is fully discussed, and there is a chapter upon the *x*-ray investigation of the epileptic patient. Dr. Herbert Jasper contributes a chapter upon electro-encephalography, expressing the current tendency to find the correlation between the electro-encephalogram and the clinical manifestations of the dysrhythmia a good deal less simple than was at first supposed. The medical aspects of epilepsy are less fully treated than the surgical, and, indeed, probably the day has passed when it was possible for two or even three workers to deal adequately with epilepsy in all its aspects. It would have been better, therefore, if the authors had resisted the temptation to be encyclopaedic. Nevertheless they have earned our gratitude for an outstanding survey of the surgical aspects of epilepsy and a rich mine of data illuminating its clinical features and pathological physiology.

LIFE'S UNFOLDING

Life's Unfolding. By Sir Charles Sherrington, O.M. The Thinker's Library, No. 94 (Science Section). (Pp. 124. 2s. 6d.) London: Watts and Co.

It was a happy thought on Sir Charles Sherrington's part to reprint in compact form the earlier portion of his Gifford Lectures, dealing with life's unfolding from the synthesis of the protein molecule, through the microscopic cell on to an "organized life system centred upon itself." Here these steps are interpreted by a master of science, enriched with the mind of a philosopher and poet. He reminds us that wonder commonly vanishes with childhood; the wonderful is taken for granted, so as to enable us to get on with life. Later, when life's pace is slackened, wonder may return. Wonder, then, is the mood in which he invites us to approach his subject, and it is indeed a wonderful retelling of the story, both vivid and accurate. One is reminded of a picture, which, having become dulled, is restored to its pristine freshness of colour by a skilful hand. Take, for example, the description of the great adventure by which our marine ancestors adapted themselves to a terrestrial existence, while their descendants still carry about the salt of the archaic sea in their internal economy. Avoiding anthropomorphism in his discussion of "higher" and "lower" forms of life, he still claims that "range of dominance of the environment is a feature to which the term higher can be accorded. Since mind is one of the great keys to this dominance the term is almost graded by degree of mind. At the present time man is as regards conquest of his surroundings the most successful of all living forms. On that ground we can acclaim him the highest."

Sir James Goodhart in his Harveian Oration in 1912, speaking of the passing of the predominance of morbid anatomy, humorously referred to the evolution of the biochemist as a "curious hybrid," and then went on to discuss with sympathetic insight the probable chemical approach to cell physiology and pathology in terms of surface tensions and coenzymes. It has proved almost startlingly prophetic. What he adumbrated, Sir Charles Sherrington here reveals more fully, and asks if deeper knowledge has detracted from the symbolism and pathos of human values. He rightly thinks it would be strange if this were so. To read this book is to understand why the author is secure in the affectionate admiration of all his confrères.

GYNAECOLOGICAL SURGERY

Textbook of Gynaecological Surgery. By Sir Comyns Berkeley, M.D., F.R.C.P., F.R.C.S., and Victor Bonney, M.S., M.D., F.R.C.S. Fourth edition. (Pp. 912; illustrated. 50s.) London, New York, Toronto, and Melbourne: Cassell and Co. 1942.

This is a great book, and its fourth edition will be welcomed. Berkeley and Bonney have individually, and as a brilliant team, made many contributions to surgery, and by outstanding merit have through the years achieved an international reputation of the highest order. Scattered throughout the British Commonwealth of Nations there is a band of younger men whose privilege it has been to serve an apprenticeship at the Chelsea Hospital for Women, London, where they have become imbued with the Berkeley–Bonney tradition. They are the disciples of the Bonney technique and the Bonney conservatism, and to them, as to many others, Bonney is the greatest living exponent of gynaecological surgery. They remember him as an exquisite surgeon, a stimulating thinker and leader, and a rare and generous teacher. To all such men this book is more than a textbook—it is a collection of pleasant memories, brilliantly and lavishly illustrated by graphic sketches drawn by Bonney the artist. The majority of readers will not have shared the privilege of learning technique directly from these distinguished authors, but there can be few who have not been influenced by their teaching and practice. The new edition brings the story of progress in operative gynaecological surgery to date. The sections dealing with vaginal atresia, ovarian operations, and intestinal obstruction have been extensively rewritten, and it is encouraging to note that with greater experience the trend of practice is to become more conservative in the surgery of the pelvis.

A copy of this book should be possessed and studied by all gynaecologists, and by all surgeons who still by obligation or choice occasionally perform these operations. To those who search its pages it will prove itself a guide, philosopher, and friend.

ADVANCED FIRST AID

First Aid: Surgical and Medical. By Warren H. Cole, M.D., F.A.C.S., and Charles B. Puestow, M.S., M.D., F.A.C.S. (Pp. 351; illustrated. 16s.) New York and London: D. Appleton-Century Company.

It is interesting to read an American book by 19 authors published in 1942 in a country which itself had not up to then seen casualties from air raids in this war. Taken as a whole the volume is well printed, contains numerous illustrations, most of which show well what they are intended to describe, and the subjects dealt with cover a wide area. It is said to be an "advanced guide," and it certainly would appear to give information which can hardly be called "first aid"; as, for example, in dealing with first aid of open complicated fractures of the skull it is stated that "first-aid care involves débridement . . . gross particles of metal, bone, hair, dirt, cloth, head covering, etc., should be removed as well as possible, and the area irrigated with warm, sterile saline solution"! True, it is said that this first aid should be done only by the physician. But is it first aid? Is it not rather surgical treatment to be carried out by a surgeon in hospital?

Chapter I gives an excellent summary of precautions and limitations in first-aid work. In Chapter II general principles are clearly taught. It is questionable whether the short chapter on anatomy and physiology should have any place in a work of this kind. Bandaging is really well illustrated. Blood transfusion is described at far too great a length for a textbook on first aid. The account of the methods of transportation is one of the best extant. Figure 72 gives a graphic description of dangers encountered during an aerial bombardment. The first-aid treatment of abdominal injuries is excellent, and towards the end of the work there is a very good chapter on medical emergencies. The whole book will be read with interest by British workers, although the price is rather high.

Notes on Books

We have received a copy of a useful pamphlet entitled *Insurance for All and Everything* (Longmans, Green and Co.; 1s. 6d.), in which Sir RONALD DAVISON discusses the practical application of Sir William Beveridge's plan for social security—how it might affect the ordinary citizen and how it might be administered. The first part is a summary of the plan, while the second suggests how it would work by taking as an example the life of an imaginary John Smith and Jennie Brown. The author, who says that "Beveridge clearly intends his plan to be an instrument of population policy in these islands," selects the provision of an "all-in medical service" as the most urgent matter arising out of the adoption of a policy of "insurance for all." Of the panel system he says that this "or any wide extension of it could not long carry on . . . it is a meagre and sorry business." This is surely too summary a dismissal of a service which has provided not unsuccessfully for the medical care of a large part of the population for thirty years.

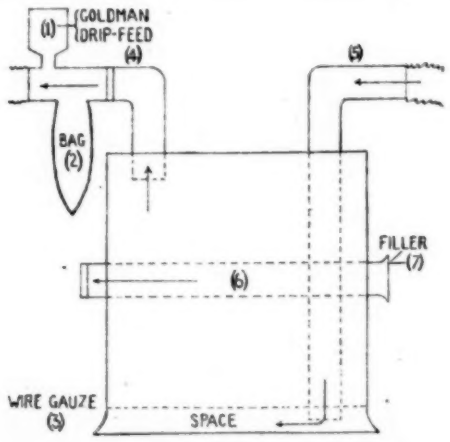
A gentle charm pervades the pages of Dr. E. ROLAND WILLIAMS'S *Jetsam* (W. Collins, Sons and Co.; 1s.), which is a potpourri of memories, scenery, quaint characters, and local superstitions in a setting provided by Welsh hills and the Welsh sea. It is none the worse for a touch of nostalgic sentiment, and a pleasant hour can be spent in reading it.

Preparations and Appliances

CO_2 ABSORBER IMPROVISED AT SEA FROM RESPIRATOR PARTS

Surgeon Commander H. PARRY PRICE (Banbury, Oxon) writes:

Economy in nitrous oxide, oxygen, and ether is of paramount importance in wartime, and more so at sea perhaps than anywhere else. Not so long ago I was compelled to devise a CO_2 absorber from portions of a Service respirator, having to add a McGill rebreathing bag (1) and a Goldman drip-feed for vinesthene (2), which can be equally well used for ether or trichlorethylene (trilene). We overcame the unidirectional valves by borrowing the dental surgeon's 3-way valve from the usual old-fashioned nitrous oxide apparatus, adding a gas inlet on the inspiration side as later described. (This 3-way valve had its expiratory end opened up and tubing attached to it, to lead the expirations back to the absorber.) We overcame the rather costly "cut-out" tap, which would normally cut the absorber out of the circuit, by merely fitting a straight-through pipe on the side of the absorber (6). The tubing (respirator tubing) is detached when one wants to cut out the absorber from



joints (4) and (5), and is attached to this straight-through pipe (6). Total rebreathing without absorption is thus obtained. On the other hand the tubing can only be detached at (7), and a cork placed in the metal tube; expiration will then pass out through the end of the tube into the air. This is useful for induction, if one cannot make use of an intravenous barbiturate. A small metal tube is let into the inspiratory end of the N_2O valve to bring in the gases from a Boyle or other apparatus. In our case this was a watersight feed made by our engine-room staff from a Horlick's malted milk pot. It was the only glass jar we could obtain with a metal screw cap. The apparatus gives most efficient results, and I feel certain that it could easily be made at a cost of £3 to £4. Trilene works excellently when used to replace vinesthene in the Goldman drip-feed.

A GAG FOR DYSFUNCTION OF THE TEMPORO-MANDIBULAR JOINT FOLLOWING MANDIBULAR INJURY

Mr. JOHN W. HALLAM, M.R.C.S., L.D.S., writes:

Dysfunction of the temporo-mandibular joint commonly follows upon mandibular injury, although in most cases it is of a very transitory nature. The dysfunction usually manifests itself as a limitation of range of movement, being more marked in a vertical than in a lateral direction. More rarely there is a tendency for the mandible to deviate laterally on opening the mouth.

The causes may be functional, traumatic, or due to wound fibrosis or to actual injury involving the joint. A proportion are induced by the treatment of the injured jaw, the mandible being immobilized in a position contrary to that which it takes when at rest—i.e., with the upper and lower teeth slightly apart; this position of rest is attained with "closed" cap splints. Treatment with open cap splints, interdental, eyelet, arch wiring, or any method which immobilizes the mandible with the teeth in perfect occlusion, is more likely to result in a limitation of mandibular movement.

FIG. 1

FIG. 2

The functional type is by far the commonest, and is easily recognized by stimulating the glosso-pharyngeal nerve to induce retching. Then, if the patient is shown in a mirror that his capabilities of opening are greater than he imagined, and the mechanism involved is explained to him, a cure will rapidly ensue.

Forcible opening is sometimes necessary in the mechanical types of limitation, the maxillae being separated by means of gags acting between the upper and lower teeth. The gag to be recommended is one which spreads the thrust over the greatest possible number of teeth. This is particularly important when the thrust has to be exerted over an area which has recently been injured (as often occurs). At the Liverpool Jaw Injury Centre such a gag has been devised and constructed which is simple to use and effective in its action (Figs. 1 and 2). In edentulous patients the gag may be covered with black gutta-percha.

A corkscrew, a Mason, or a Ferguson gag produces too great a strain on the two or four teeth against which it operates. The thrust should be maintained for long and regular periods throughout the day. Twenty minutes in every three hours has proved very effective, particularly so when carried out under the supervision and with the encouragement of a dental surgeon. Condylar excision is seldom necessary, and should only be considered when all other lines of treatment have failed.

COMPLETE EXTRACT OF LIVER

There is more than a suspicion that in the purification of the more refined liver extracts for the treatment of pernicious anaemia, factors of value in the treatment of cognate conditions may be omitted. Certainly much of the eluate and filtrate fractions is discarded, though they are known to be of value in experimental anaemias. For this reason the Glaxo Laboratories have prepared a liver extract by a new method in which fractionation procedures are reduced to a minimum, and they recommend it for pernicious anaemia of pregnancy, and the megalocytic anaemias of the nutritional and intestinal type. It is not meant to supplant their "examen" in the treatment of Addison's disease, except perhaps when there are severe spinal lesions. We welcome the product but we cannot but disapprove of the name "plexan," which is even more meaningless and unnecessary than "examen." Surely "complete extract of liver" or (if a Latin name is preferred) "liquor hepatis merus (Glaxo)" would have been more helpful. In spite of protests some British manufacturers remain impervious to the principles of pharmaceutical nomenclature.

PLANNING IN THE TREATMENT OF CANCER

BY

FRANK ELLIS, M.B., M.Sc., F.F.R., D.M.R.

Medical Director, Sheffield Radium Centre

Progress in medicine has mainly been achieved in the past, and will be furthered in the future, by the experimental approach to questions requiring solution. By this is not meant recourse to laboratories and experiments on animals only, important though the part may be which these factors play in elucidating our problems. Mackenzie (1918) stressed the importance of the experimental approach in clinical medicine, and it would seem that the cancer problem might gain considerably by clear-sighted and logical planning of clinical experiments. The implications of the Cancer Act make the planning of such experiments of great importance, and the present state of medical opinion renders them necessary.

The Problem of Radiotherapy or Surgery

Among certain sections of the profession engaged in the treatment of cancer there is a tendency to consider that an issue is at stake; that radiotherapy and surgery are alternatives advocated by their protagonists—an attitude which is tempered only by expediency on the one hand and necessity on the other. Only when an issue is a doubtful one does it provoke a conflict. When doubt is extinguished the conflict ceases. In the treatment of cancer this axiom applies, and the conflict will remain a reflection on the profession and a deterrent to progress unless a conscious effort is made to solve it.

To take one form of cancer considered by most people to-day to be a field for radiotherapy, the answers to certain questions are by no means clear. While the treatment of cancer of the cervix by radiotherapy is generally accepted as better than its treatment by surgery it is by no means proved that in certain selected cases surgical results are not more sure. Though radium treatment is known to result in a certain percentage of cases surviving for 5 years, and although supplementary *x*-ray treatment has been used for several years, it is not proved that the results of the combined treatment show any significant advance. Moreover, while some successes are to be expected from either radium or surgery alone, an inverse proportion of failures is also to be expected. The question thus presents itself: In what proportion of failures by radiotherapy would surgery have been successful, and vice versa?

Furthermore, the question of combined radiotherapy and surgery in this condition is of some importance from the point of view not only of continuing the individual patient's life but also in making that life as free from ill-health as possible. A uterus without cancer may still be better removed. No figures are at present available on this point, although Crossen and Newell (1935) showed that combined surgery and irradiation might be better than irradiation alone.

These problems in connexion with cancer of the cervix may be multiplied in connexion with cancer in any other situation. The aim is at present the best health attainable for every individual patient. It may never be possible to secure this, and with adequate progress in preventive methods and chemotherapy the problem may become archaic before it is solved. This being the common aim, however, for both surgeons and radiotherapists, they should combine to achieve it. The specialization which has become a feature of present-day surgery will provide an impetus to progress because difficulties requiring solution will be realized, methods become more uniform, and interest be more sustained.

The Statistical Approach

The peculiar feature of cancer treatment is that there are so many possible complicating factors that the result in any individual case can be accurately prophesied only in statistical terms. Similarly, the answer to any problem in connexion with cancer treatment must be sought on statistical lines. Suppose the problem is stated in its simplest terms. What Mr. Smith would like to know is whether he can obtain a better result by treating Mrs. Brown with radium or with surgery. Since he can treat the patient only once the problem is insoluble. The next best thing would be to treat with radium another patient exactly like Mrs. Brown, having previously operated on Mrs. Brown, and then to observe the results. But it is impossible to keep them under exactly similar conditions for subsequent observation. The only way to solve the problem, therefore, is to treat so many patients with radium and so many with surgery that the differences to be expected between radium and surgical treatment of a single individual will be shown in terms of probability. Statistical methods are such that if large enough groups are chosen and only one factor is varied, an unequivocal statement of the relative effect of the varied factor can be made together with its probable error.

Necessary Measures

To answer the many questions that radiotherapists and surgeons can ask in connexion with cancer treatment, therefore, the following steps are necessary—having in view that the aim is to decide on the treatment in individual cases when the problems have been solved: (1) They must co-operate to decide on *a priori* grounds and in the light of available evidence what are the problems requiring solution. (2) They must devise suitable experiments for each problem. (3) Each experiment must be carried out without variation in the conditions until a statistically certain result is achieved or the problem ceases to require solution because of developments on other lines, such as chemotherapy.

In an experiment it must be ensured that: (*a*) no selection of cases occurs; (*b*) no change in methods of treatment is permitted; (*c*) no other factors are introduced; (*d*) enough cases are treated to discover if there is a statistically significant difference in end-results; (*e*) cases are followed up and observed long enough to justify conclusions being drawn; (*f*) adequate records for the purpose of the experiment are kept.

For instance, it may be decided to determine whether *x* rays alone, contact *x* rays after removal of the thyroid cartilage, or surgical removal by laryngofissure is the best method of treatment for intrinsic carcinoma of the larynx. The best way to avoid selection of cases is to ensure that for the purpose of the experiment only those which are suitable for treatment by any of the methods are included in the groups. Cases considered unsuitable, say, for laryngofissure would be excluded; but they could be included in another experiment —e.g., for determining the better of two radiotherapy techniques.

If the methods decided upon are then followed without variation and the results assessed statistically from time to time, an answer will certainly be obtained. The impending organization of radiotherapy into large centres together with regionalization of surgery will facilitate co-operation and ensure uniformity of method. This co-operation will destroy the antagonism between radiotherapists and surgeons and result in an alliance against cancer.

In this way plans can be made for dealing with all types of cancer so as eventually to know what must be done in any individual case to obtain the best result.

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Mackenzie, Sir James (1920). *Symptoms and their Interpretation*, London, pp. 1, 273.

The spring number (Volume VII, No. 1) of *Art Notes* (28a, Cornmarket Street, Oxford) is devoted as to 10 of its 16 pages to hospital planning. Mr. N. Notley, A.R.I.B.A., and Mr. R. Brown, in an article on this subject, suggest the principles that should be followed in choosing the site of a hospital, and in the general lay-out, the construction of wards and operating theatres, and the provision of heating and ventilation. Hospitals in Paris, Milan, New York, and Los Angeles are quoted as good examples, and Germany is considered to be in advance even of America in the planning of wards. The authors describe their design, submitted in a competition before the war, for the rebuilding of St. George's Hospital, but not at Hyde Park Corner.

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THE TOWN CHILD: A CRITICAL SURVEY

The lessons of the great social experiment of evacuation will take a long time to learn. They will be reflected, we hope, in future housing policy and especially in a new outlook on education. Evacuation threw a grim light on some aspects of town life never dreamed of by those whose acquaintance was only with the exterior aspect of the slums. No sooner had the children been bundled off to their country hosts at the beginning of the war than an outcry arose that many of them were dirty and verminous, deplorable in their habits, ill clad and ill shod, defiant and destructive. Allowance must be made for some exaggeration. Even had the children been little angels, they would not have been welcome guests to some of those on whom they were compulsorily billeted. But the complaints were by no means without substance, nor did they relate only to a very small proportion of the children. A group of professional women, acting upon a resolution from the National Federation of Women's Institutes, set themselves to find out the truth about these accusations, and *Our Towns: A Close Up*[1] is the horrifying result. The report is addressed to readers who have stout stomachs and an appetite for facts, however disagreeable the facts may be. It takes refuge in no polite euphemisms. It does not refer to scabies as "shelter rash" or to lousiness as "uncleanliness." Evacuation proved to be a window through which town life in its more squalid aspects was revealed. What it showed was poverty, but a poverty which was not so much lack of means as lack of personal discipline and social standard. One town clerk in a reception area states that as the children defiled on arrival "the heads of some of them could be seen crawling with vermin." In another area some of the children arrived in garments so verminous that these had to be immediately burned. In another, 23% of the evacuated children were found to have head lice, and, what is worse, the cleansers found many of them reinfested after every visit from relatives and friends. Dr. Kenneth Mellanby had previously given some idea of the extent of the infestation with head lice.[2] He had shown that in a sample of children from ten industrial cities over 50% of the girls between the ages of seven and eleven were infested. In the country infestation is regarded as a disgrace: in the towns it is treated as a lighter matter.

Other evidence which startled the people concerned out of their customary modesty related to insanitary habits among the children, testifying to a low standard of behaviour in the places from which they had come. Enuresis was found to be common at all ages up to fifteen years. Among the younger children this might be an infantile reversion due to a new sense of insecurity, but there were a substantial number of other cases of a more difficult type, without any detectable medical origin. A school medical officer in Surrey says that the problem of enuresis was much eased by the return to London of the worst cases of the slothful or untrained type; another in Essex attributes the condition to lack of early training. Faecal incontinence was also a great difficulty. "Some of the younger [children]," say the compilers of this volume, "were said to be wholly unaccustomed to use a closet and to have used the hearth or corners of the room for defaecation." This is a reflection not only upon the training of the children but upon the housing conditions. It is stated in *When We Build Again*, a publication of the Bournville Village Trust, that in 1935 Birmingham had 38,773 back-to-back houses, 51,794 houses without a separate water-closet, and 13,650 without a separate water supply. In Shoreditch there are said to be numerous three-story houses occupied as tenements by three families, sharing two closets, one at the top of the house and the other perhaps forty feet away in the yard outside.

All this and much more comes within the uncomfortable beams of this searchlight. The remedy lies partly in the provision of better and more sanitary housing, but that will not meet the case of children whose parents are neglectful and lazy and incompetent. The defects in behaviour reflect not only upon the parents but to some extent upon the teachers and upon the educational system, which instructs the children in remote geography but forgets entirely their own bedrooms and backyards. Schools could teach biology in such a way as to relate it to personal hygiene and behaviour. They could teach many other intimate and personal things which more fortunate children learn in their own homes. But, unhappily, the schools and their medical services do not get hold of the children until it is too late. It is not the Jesuit alone but the sanitary educationist who wants the child up to the age of seven, or even only up to the age of five. As things are, the five-year-old enters school suffering from complaints and faulty habits which the school doctors and nurses will spend the next nine years of his life in trying to eradicate. The best efforts of the school medical service are frustrated also by the reservoir of infestation and contagion in the pre-school child. The compilers of this report have been impressed by nothing so much as the need to multiply nursery schools in the poor quarters of towns. In such schools good eating and sleeping habits and cleanliness in body and behaviour could be inculcated, and the child learn discipline and self-respect. The wide extension of nursery schools will be costly, but less costly than dirt and disease and delinquency. It is the nursery school, if anything, which can break the insanitary entail and prevent the sins of the fathers—more often the sheer feckléssness of the mothers—from being visited upon the children. Prof. R. J. A. Berry, in a letter to the *Times* last month, pointed out that many of the unpleasant features revealed by the evacuation of children are precisely those characteristic of feeble-mindedness, and said: "If the parents themselves are feeble-minded then the sooner the child is removed, even if only for part of the time, to a nursery school, the better for the child and for those who sooner or later have to pay for its segregation. At the moment the educational system catches the defective a little too late."

[1] *Our Towns: A Close Up.* By the Hygiene Committee of the Women's Group on Public Welfare (National Council of Social Service). Oxford University Press. (Paper 5s.; cloth 8s. 6d.)

[2] *Med. Off.*, Feb. 1, 1941.

ACID PHOSPHATASE AND PROSTATIC CANCER

The results obtained by Huggins and his colleagues[1] in the treatment of prostatic carcinoma have aroused much interest in the physiology of this gland, and more particularly in its ability to secrete a special type of phosphatase. The group of ferments to which it belongs, the phosphatases, have the power of liberating inorganic phosphate from hexose phosphate and other organic phosphorus compounds. They exist in many tissues, and their production is a manifestation of cellular activity. Many types

[1] *Arch. Surg.*, 1941, **43**, 209.

have been described, but two are of outstanding clinical interest: the alkaline, which comes chiefly from bone cells, and the acid, which is formed in the prostatic glandular epithelium.[2] Curiously enough, only in man and monkey does the production of acid phosphatase occur in significant amounts, and then only after the onset of puberty.[3] Administration of male hormone to immature male rhesus monkeys leads to a very great increase in the concentration of acid phosphatase in prostate tissue. The suggestion has been put forward that the function of prostatic phosphatase is to split up hexose phosphate and other phosphoric esters in the course of glycogenolysis, upon which human spermatozoa largely depend for the energy requirements of prolonged motility after ejaculation. Although it is unlikely that the enzyme has any function in the glandular epithelium of the prostate, it is probably an important factor in the formation of prostatic calculi. Normally the ferment is excreted in the prostatic fluid, with the result that very little is found in the blood stream. The small amount of acid phosphatase that can be detected in the plasma of a healthy subject is derived from liver, spleen, bone, and kidney.

The information was of academic interest until the discovery of Gutman and his co-workers[4] that tumour cells derived from prostatic epithelium secrete large amounts of acid phosphatase brought the matter into the clinical field. With invasion of blood and lymph vessels by tumour cells a channel is opened to the ferment, so that it can appear in high concentration in the plasma. The Gutmans immediately applied this observation to the differential diagnosis of metastases derived from prostatic carcinoma.[5] They showed that by the method in use not more than 3 units of acid phosphatase per 100 c.cm. appear in the serum of a normal subject. Occasionally a slight increase is detected in the plasma of patients with tumours and other diseases of bone, liver, and other organs not associated with the prostate. Sullivan, Gutman, and Gutman[3] found in a series of 130 patients with bone metastases arising from cancer of the prostate that 110 had acid phosphatase values exceeding 3 units and 95 over 5 units per 100 c.cm. of serum. It would appear, therefore, that a value below 3 excludes bone involvement from prostatic cancer, and that one over 5 almost certainly indicates this. In 3 cases of Paget's disease the acid phosphatase value exceeded 5, but this did not lead to any trouble in diagnosis, because in this condition the alkaline phosphatase is raised, which is not the case with prostatic metastases. In only two instances did any confusion arise: one was in a case of carcinoma of the urinary bladder invading the prostate, and the other in a case of bronchogenic carcinoma with metastases in bone. It should be stressed that an indubitably high acid phosphatase is not usually found unless the skeletal system is involved. The data at present available do not permit one to state precisely how far extracapsular involvement of prostatic carcinoma must extend before a significant increase in plasma acid phosphatase can be detected. Huggins and Hodges,[6] however, showed that injection of testosterone is rapidly followed by an increase of acid phosphatase if there are any metastases in the bones. Accordingly this "provocative" injection of androgen may serve as an excellent diagnostic test of bone involvement when *x*-ray evidence is absent. The same workers went a stage further, and showed that removal of the male hormone by castration[1] or injection of oestrogen[7] led to remarkable clinical improvement, associated with a fall in the acid phosphatase value, which began within 24 hours.

Therapeutic deductions are obvious, but what is of interest here is the opportunity afforded for an objective test to indicate the response to operation. In an excellent review of the whole subject Sullivan and his colleagues[3] have summarized the clinical applications of acid phosphatase estimation. It provides independent evidence of the presence of metastases from carcinoma of the prostate, and it may be helpful in detecting the site of the primary tumour when the prostate is not unduly enlarged. It is of value also in determining when enucleation of the prostate is likely to be of no avail, because any increase in acid phosphatase means that the tumour cells have already reached the skeleton. After removal of a prostate which is afterwards found on histological examination to present signs of malignancy, repeated estimations of plasma acid phosphatase will detect any spread to the skeleton. Finally, if castration or other form of androgen control is carried out, the level of acid phosphatase in the blood serves as a useful means for early assessment of the treatment. The story is not yet finished, because there are hopes of further advances, direct and indirect. Even at this stage, however, there is a strong temptation for the academic investigator to point the moral that even from the most abstruse test-tube investigations matters of great clinical import and therapeutic interest may emerge.

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[4] *Amer. J. Cancer*, 1936, **28**, 485.
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[7] Huggins, C., Scott, W. W., and Hodges, C. V., *J. Urol.*, 1941, **46**, 997.

THE PROTEIN RESERVOIR

It has now become so usual to estimate the serum proteins in the study of nutrition, shock, and metabolic disease that Peters[1] has done well to emphasize the implications of physiological work on this subject. Modern studies began when Starling showed that the exchange of fluid between the blood stream and the tissues depended on the balance between the capillary blood pressure and the colloid osmotic pressure of the proteins. The probability of a dual causation should always be remembered in the treatment of oedema. In heart failure oedema may prove intractable if, as the result of malnutrition, serum proteins are even slightly reduced. The ascites and oedema of cirrhosis are as much dependent on a fall in serum albumin as a rise in portal pressure. Because of its smaller molecular size and other properties, the serum albumin is the all-important factor in the maintenance of the colloidal osmotic pressure. Moreover, the globulin is but little reduced by albuminuria or malnutrition, and it may, indeed, be greatly increased in cirrhosis and other diseases in which albumin is diminished. Albumin and globulin are in fact independent variables in the serum, and no determination of the proteins that does not include separate measurement of these fractions is satisfactory. When the clinician finds the serum proteins reduced he is tempted to think they may be rapidly increased by the transfusion of plasma. This is a false analogy with the transfusion of red cells, which exist in a closed system within the blood vessels. Proteins, as Beattie and Collard have shown, flow freely in and out of the vascular system,[2] and the serum proteins are in equilibrium with the tissue proteins. The level of the proteins in the serum can be likened to the level of the fluid in a manometer which communicates with a much larger system. When a dog was starved of protein for 80 days the serum albumin was reduced by 70%, the haemoglobin by 50%, and the body weight by about 20%. But if the percentages are converted into total values, it is seen that of the total protein lost about 80% came from the tissues, only about 3% from the serum proteins, and the remainder

[1] *J. Mt. Sinai Hosp.*, 1942, **9**, 127.
[2] *British Medical Journal*, 1942, **1**, 459; **2**, 301, 507.

from haemoglobin. A moderate deficiency of serum albumin, then, may denote a severe depletion of tissue protein, and for every gramme by which we wish to raise the level of serum albumin 30 grammes must be put into the tissues. If this were more generally appreciated there would be less surprise that in malnutrition serum albumin cannot be restored with great celerity or that the transfusion of plasma is relatively ineffective in the treatment of oedema. A similar line of argument will fortify us against disappointment with the results of parenteral administration of protein autolysates, such as is being developed in the United States.[3] To give only the minimum daily requirement of nitrogen in the form of intravenous injections of amino-acids requires an unpleasantly large volume of fluid. Many lives have been saved by the transfusion of plasma in shock and acute perturbations of the blood volume, but these are conditions in which the body reservoir of protein is intact. Once this reservoir is emptied it is not practicable to refill it by pouring liquid into the manometer—i.e., by parenteral administration of proteins or amino-acids. Reliance must be placed on the natural channel of supply—the assimilation of proteins via the alimentary tract.

PEPTIC ULCER OF THE OESOPHAGUS

Chronic peptic ulcer of the oesophagus has for long been recognized, though it has generally been regarded as almost a medical curiosity. In recent years, however, Jackson and others have suggested that the condition is much less rare than was previously thought, and in a paper recently published R. C. Dick and Sir Arthur Hurst[4] agree with this view. They describe a further series of cases and bring out a number of important points on aetiology, symptomatology, and treatment. Chronic oesophageal peptic ulcers differ in no way in their morbid anatomy from ulcers of the stomach or duodenum; they may vary in size but are usually single. The majority appear to heal completely, causing scarring with or without cicatricial stenosis; malignant degeneration rarely or never occurs. On oesophagoscopy they appear as flat ulcers, with yellowish exudate and hyperaemic zone around, and without the raised fungating edges of a carcinoma. Jackson was able to demonstrate scars of healed ulcers in 67 cases by oesophagoscopy, as well as 21 active ulcers. As with peptic ulcers elsewhere, the acid gastric juice appears to be an essential factor in causation. Dick and Hurst note that in the majority of cases this regurgitates through the cardiac orifice of the stomach owing to incompetence of this opening associated with a congenitally short oesophagus. They quote the findings of Johnstone, in all of whose seven cases there was definite shortening of the oesophagus, but they themselves consider that this shortening is congenital and not cicatricial, being in most cases found with a diaphragmatic hernia of a portion of the stomach. In a very few cases an ectopic patch of gastric mucous membrane occurs in the oesophagus and secretes acid and pepsin just as in the stomach itself.

The symptoms of chronic ulcer of the oesophagus differ from those of carcinoma or of "cardiospasm" in a number of ways. Pain is often severe and appears during eating or drinking—at first only with hard or irritating food, but later with almost every meal. It may also be felt later after eating if the patient bends forward or lies down; it may be relieved by sitting up, or by stretching the arms above the head, though this only happens in cases associated with a diaphragmatic hernia. The pain is situated deeply in the middle line behind the lower end of the sternum, and may come and go just as in ulcer of the stomach, with periods of freedom lasting even for years. The natural tendency is towards recovery, but in about half the cases there is gradual dysphagia due to spasm; occasionally organic stricture develops. With stricture, retention of gas in the stomach may take place as well as obstruction to the passage of food from above, and the rare condition described as "aérogastrie bloquée" may then result, with intense gastric dilatation. The diagnosis may be confirmed by *x*-ray examination or oesophagoscopy may be employed, though, owing to associated spasm, the ulcer cannot always be seen. If there is clinical suspicion of oesophageal ulcer—as suggested by the symptoms, findings of occult blood in the stools, and perhaps haematemesis—special methods of *x*-ray examination should be adopted. The simple fluid barium emulsion does not often reveal the ulcer, and a semi-solid meal is required: the patient should swallow it lying down, the foot of the bed being raised. The characteristic picture of spastic narrowing with a central ulcer niche can often be recognized, as well as a portion of the stomach lying within the thorax above the diaphragmatic opening.

In treatment, fluid feeds are necessary at first, but need not be given as frequently as in gastric or duodenal ulcer; the patient is better sitting up; the bed should be raised at night so that the head is high, in the hope that regurgitation of gastric contents into the oesophagus will thus be prevented. Atropine and olive oil are also recommended. If such medical measures fail, gastrostomy is advisable, and was required in 2 of the 16 cases described by Dick and Hurst. Some after-care on similar lines to the active treatment is important to prevent recurrence.

With careful diagnosis and thorough treatment the prognosis is good, and although oesophageal ulcer is not common, it is important that it should not be forgotten when obscure cases of early gastric pain or dysphagia are encountered.

REFRIGERATION ANAESTHESIA

Baron Larrey, Napoleon's army surgeon, is said to have amputated limbs painlessly at the Battle of Eylau in a temperature of −19° C. The deliberate use of cold, however, to obtain anaesthesia, while well known, and subjected to spasmodic attempts at popularization,[1] has never been taken up seriously, largely through the fear of damaging the tissues and the practical difficulties of refrigerating more than small areas of the body surface. The experience of Crossman, Allen, Hurley, Ruggiero, and Warden[2 3] suggests that it is a useful method of anaesthesia for amputation in "poor-risk" patients in whom the circulation in the limb is already failing. For efficient refrigeration of a limb—and their report deals with the lower limbs only—a tourniquet is essential. They emphasize that the main harmful effect of a tourniquet is by direct pressure, particularly on nerves, and to minimize this they advise narrow gum-rubber tubing. Experiments on animals have shown[4] that a limb will survive up to 12 to 15 hours' deprival of blood supply at ordinary temperatures, and very much longer when cooled to just above freezing-point. Ligation of a limb causes shock, which after 6 to 8 hours may be sufficient ultimately to kill the patient. Human resistance to this form of shock is high, and little ill effect of the sort need be expected from a ligation lasting 2 to 3 hours. Cold lowers the resistance of the tissues to infection, but the activity of bacteria present is decreased. Objection to cold might be made on the ground that the trickle of blood in the arteriosclerotic limb threatened with gangrene would be still further reduced and real danger

[3] *J. Amer. med. Ass.* 1942, **120**, 1176.
[4] *Quart. J. Med.*, 1942, **11**, 105.

[1] Arnott, *Lancet*, 1848, **1**, 287.
[2] *Anesth. & Analges.*, 1942, **21**, 241.
[3] *Arch. Surg.*, Chicago, 1942, **44**, 139.
[4] Allen, *Surg. Gynec. Obstet.*, 1939, **68**, 1047

arise of sloughing flaps. This is more than offset by the lowering in metabolic activity of the tissues, with consequent reduction in oxygen need and carbon dioxide production. One great advantage of the use of refrigeration is that no preparation other than a mild sedative in the occasional apprehensive patient is required. The authors use either ice or electrical refrigeration to cool the limb, and have found that the time of cooling to produce anaesthesia varies from 1 hour for a foot to 2½ hours for a thigh amputation. Frostbite does not occur, and the skin temperature does not usually fall below 40° F. As Rupp[5] points out, refrigeration may prove useful in other directions. It would probably lengthen the time during which embolectomy could be undertaken, and it might be invaluable for cases inoperable by any other method.

VENEREAL DISEASE IN SWEDEN

The large rise in the incidence of venereal diseases in Britain since the beginning of the war has attracted widespread comment. In discussions on the thorny problem of prevention and control comparison has been made with the experience of Scandinavian countries, where legislation has been in operation for some years. A law to combat venereal disease was introduced in 1918 in Sweden, and this lends special interest to an examination by Dahlberg[6] of the trend of the incidence of venereal diseases in that country from 1913 to 1938. Legislation and the methods adopted for the control of venereal disease were, it appears, very successful in the case of syphilis, but made little impression on the trend of gonorrhoea. After a slow rise in the incidence of venereal diseases during the first years of the last war a rapid increase occurred in 1918 and 1919. By 1919 the number of cases of soft sore and of syphilis at ages over 1 year had been almost trebled, and the incidence of gonorrhoea was double that of 1913-14. At ages under 1 year the number of cases of syphilis rose suddenly in 1919 (followed by another small rise in 1920) to three times the previous figure. Between 1919 and 1923 the incidence of syphilis fell rapidly from 6,354 cases in the former year to 1,127 in the latter—i.e., to about half of the pre-war level. The fall continued more slowly, and in 1925 only 723 cases were recorded. This trend was interrupted by a rise to over 1,100 cases in the boom years of 1927-31. After this the prevalence of the disease again fell rapidly, and the average number of cases annually in 1936-8 was only 352, compared with 2,478 in 1913-15. Soft sore followed a similar course but with a relatively greater decrease: the annual cases numbered only 81 during 1936-8, compared with 1,387 during 1913-15. Congenital syphilis declined at a much slower rate, and it was not until 1928 that the trend returned to the pre-1914-18 level. In the last three years an average of 9 cases was recorded, as against 30 during the first three years of the period (1913-38). The curve for gonorrhoea differed from that of syphilis in the later years, though to begin with it was similar. Between 1919 and 1923 notifications of gonorrhoea diminished from 20,594 to 10,321—to pre-war level. They then rose until 1930, when 14,388 cases were recorded, and afterwards decreased but remained above the pre-war level. The annual average number of notifications of gonorrhoea in 1936-8 was 12,125, compared with 10,621 in 1913-15. The percentage of male to female patients was approximately 70 for syphilis and 90 for soft sore, and only small fluctuations occurred in this percentage during the twenty-six years. The male percentage for gonorrhoea, however, has shown a progressive fall from 80 in the beginning of the period to 70 at the end.

Dahlberg considers that the difference between the trends of gonorrhoea and of both syphilis and soft sore may be due partly to the difference in the diseases. Gonorrhoea, being more contagious, is consequently far commoner than the other two diseases. The symptoms are milder and the patient may optimistically but erroneously believe he is no longer a source of danger to others. There is also a possibility that gonorrhoea may be transmitted during the initial period before the patient is sufficiently aware of it to seek treatment. After discussing various alternative explanations, Dahlberg concludes that the law of 1918 has played an important part in the large reduction of syphilis and soft sore. Diseased males behave with less irresponsibility to prostitutes for fear of penalties, and the instructions which every infected person receives may also have been a factor in the decline of these two diseases.

DIET IN PULMONARY TUBERCULOSIS

The part played by malnutrition in the aetiology of tuberculosis is now generally recognized; yet it is remarkable how scanty is the scientific evidence for this widespread belief. Malnutrition is invariably associated with poverty, and poverty is associated with other factors besides malnutrition. Among these, just how important is the lack of proper food in determining lowered resistance to tuberculous infection? Perhaps the statistical investigation carried out by Knud Faber[1] into the incidence of tuberculosis in Denmark during the war of 1914-18 provides the most trustworthy evidence of the effect of food deficiency on the incidence of tuberculosis. According to Faber it was shortage of first-class protein that caused the rise in tuberculosis in Denmark during the early part of that war, the shortage being due to increased exports. When, later in the war, the blockade prevented these exports, the death rate from tuberculosis in Denmark fell rapidly, though in other countries the rise continued. Dr. George Day, of the Mundesley Sanatorium, has published some interesting observations[2] in relation to the present war and the rationing compelled by it. Over varying periods of time during the past five years several groups of patients suffering from pulmonary tuberculosis have been given different diets. These were: (*a*) restricted pre-war diet, (*b*) unrestricted pre-war diet with extra sugar and injections of insulin, (*c*) wartime-rationing diet, (*d*) wartime-rationing diet with extra sugar. (The extra sugar necessary for the experiment was obtained through the Medical Research Council.) The progress rate of the average patient in each of these groups was calculated from the rate at which his body weight increased, and the rate at which his sedimentin index decreased, as worked out by Day.[3 4] He found that the patients on (*c*) made much poorer progress than any of the other groups. It appeared, too, that the rate of progress was proportional to the calorie value of the diet. There was not enough evidence to decide whether carbohydrate was the most effective ingredient as a calorie provider. It has always been believed that a diet low in fat predisposes to development of tuberculous disease. Faber blamed protein deficiency. By implication Day suspects the third proximate constituent, and more directly what is common to all three—energy value.

The Honorary Fellowship of the Royal College of Surgeons of England has been awarded to Mme. Chiang Kai-shek in recognition of her great services in the relief of suffering and the advancement of medicine in China.

[5] *Anesth. & Analges.*, 1943, **22**, 46.
[6] *Amer. J. Hyg.*, 1941, **33**, Sec. A, 51.

[1] *Acta tuberc. scand.*, 1938, **12**, 287.
[2] *Tubercle*, 1942, **23**, 215.
[3] *Lancet*, 1940, **1**, 1160.
[4] *British Medical Journal*, 1940, **2**, 376.

FORMATION OF INDIAN ARMY MEDICAL CORPS

PROPOSALS OF THE SOUTTAR MISSION

The India Office has announced that sanction has been given to the formation immediately of an Indian Army Medical Corps, to be organized on lines similar to those of the R.A.M.C. The new corps is to include both graduates and licentiates as medical officers. All regular and emergency commissioned officers of the Indian Medical Service will be seconded to it, and it will receive by transfer the whole existing personnel of the Indian Medical Department and the Indian Hospital Corps.

This action follows upon the recent visit to India of the Medical Personnel (Army in India) Mission headed by Mr. H. S. Souttar, Chairman of Council of the British Medical Association. The Mission was sent out by the Secretary of State at the request of the Government of India. In addition to Mr. Souttar, the members were Lieut.-General A. Hood, D.G.A.M.S., Major-General Sir Ernest Bradfield, late D.G.I.M.S., and now President of the Medical Board and Medical Adviser to the Secretary of State for India, and Lieut.-Colonel J. T. Robinson, R.A.M.C., who as A.D.G.A.M.S. has been in charge of medical personnel at the War Office.

The Mission set out in November, and on the way to India spent eight days in Egypt, devoting the time to an intensive investigation of the Indian hospitals, both general and C.C.S., in the Near East. They arrived in India in the middle of December, spending a month there, first visiting Delhi for an interview with the Viceroy and the heads of Departments. Other places visited were Calcutta, Lucknow, Lahore, Bombay, Poona, and Karachi. At Calcutta they met the leaders of the different medical associations.

Indian Medical Resources

The two sources of supply of doctors in India are the graduates (about 12,000) and the licentiates (about 35,000). The graduates are men who have passed through a full medical curriculum and have acquired a qualification which is registrable in the United Kingdom. Many of them have attained distinction and are capable of specialized work of a high order. For the licentiates there is no exact parallel in the medical profession in this country. They vary considerably in primary education and professional attainments. But their training, which twenty years ago was very poor indeed, has been improved, and many of them are skilled doctors who compete successfully in civil life with the university graduates. In two Provinces the status of their medical school has recently been raised and accepted as that of a college giving training for a university degree recognizable by the General Medical Council. All licentiates have passed examinations at the end of a four-years curriculum, and many have had several years' experience in practice.

The Mission, on their visit to Cairo, made special inquiries about the work of the licentiates in the field, and their own observation and the opinion of the commanding officers were that these men were capable of full medical responsibility, which up to now, together with the status and emoluments of members of the medical profession, they have been denied. They were judged by the Mission to be a loyal and hardworking body of men, not inferior in intelligence and capacity to a large number of graduates. Their main grievance, which is one of substance, is the withholding of professional responsibility and status.

The licentiates come from a financially poorer class of the community. The education of many of them has been subsidized by the Government, and in return they have had, after qualification, to engage for four or five years in Government service. In the Army, while the graduates receive full commission and pay, the licentiates can only receive the Viceroy's commissions, their pay is Rs. 75 a month (supplemented, it is true, by fairly good allowances), their pension rates and the pensions for their dependants are on a low scale, and on service they are not treated as members of the officers' mess.

The Mission proposed—and it has been accepted by the Government—that all candidates for a commission in the new corps, whether graduates or licentiates, should be required to undergo at least a three-months probationary course of training in India in those subjects which are of importance for military service. During this course they will receive instruction in such subjects as anaesthesia, blood transfusion, war wounds, nutrition, tropical diseases, and hygiene. They will be under close observation during this period, a certain amount of selection and classification will be possible, and the bestowal of a commission will turn upon the report given by the commandant. The outstanding feature of the new arrangement is that to every doctor who has qualified to practise in India will be given the opportunity to rise to any position in the corps which his abilities justify. Licentiates will receive commissions with the status to which they are entitled.

Creation of an Army Nursing Service

The other great advantage of the new corps is that it will make possible a service of orderlies of the type and training which Army nursing requires. The virtual absence of an effective nursing service from the Indian Army greatly impressed the Mission. There are only 300 registered male trained nurses in the whole of India. The bulk of the nursing is carried out by sepoys, who receive only a brief military training before they are turned into the wards to do nursing. Although the reorganization of the medical services of the Indian Army has been the subject of many reports during the last twenty years, apparently the importance of male nursing personnel as a vital part of Army medical service has escaped attention in these inquiries. An immediate attempt is to be made to attract to this service men of a superior class, who will be given an effective training in elementary nursing and first aid, with adequate pay and prospects of promotion, and it is believed that recruits will not be lacking and that in due course the Army in India will have a system of nursing orderlies like the first-class men on whom the R.A.M.C. depends.

The Mission were impressed by the possibilities of the training centres which they visited, and they took the view that if people of the proper class were recruited and technical training carried out by warrant-officers and N.C.O.s from existing sources and from compounders and male nurses, the same effort and expense would yield immensely superior results in the shape of "other ranks" personnel to those which have been hitherto forthcoming.

The effect of these changes upon the Indian Medical Service has been very gravely weighed and considered. That Service, which in one form or another dates back now for more than 180 years, has done magnificent work. Although it is now primarily a military service, responsible for the medical care of the personnel of the Indian Army, Navy, and Air Force, it was originally a civilian service which provided doctors for the Army. It has also been responsible for medical education, public health administration, and research. Its officers founded the first medical colleges, and until recently provided the majority of their teachers. It was the pioneer in the teaching and practice of Western medicine in India.

At the outbreak of the war the members of the Service numbered 780, of whom 59.6% were Europeans. The number is now 2,838, of whom only 19.9% are Europeans, so that the wartime increase has been almost entirely in the non-European element. The figures suggest the great change which has come over the Service. Meanwhile, there are these 35,000 licentiates, holding qualifications registrable in India but not in the United Kingdom, who, because they do not hold the recognized degrees, are not, under the existing law, allowed to receive commissions in the I.M.S. The Service has great responsibilities outside the Army. It would be impossible to embody it in the new corps, but to that corps its officers will be seconded. As for the other two organizations, whose personnel is to be transferred, the members of the Indian Medical Department will have a greatly improved position. The Department has two branches, British and Indian. Recruitment to the first is restricted to domiciled Europeans and Anglo-Indians, who take a five-year course at a medical college and obtain a diploma which entitles them to practise in India. Those who acquire a qualification registrable in the United Kingdom have been granted commissions in the I.M.S. The members of the Indian branch, who have

received the licentiate's diploma, are entitled to practise in India only, and assist I.M.S. officers in the care of Indian troops. The other organization, the Indian Hospital Corps, is composed of persons intended for the performance of the same duties in hospitals, laboratories, medical stores, and field medical units as "other rank" personnel in the R.A.M.C., but it has never provided an adequate or satisfactory service.

This decision to form an Indian Army Medical Corps, a homogeneous Service of officers and other ranks, in all respects similar to the R.A.M.C., may well have a profound effect for good on the Indian war effort. The speed and thoroughness with which the matter has been carried through—almost without precedent for expedition in the slow-moving East—are a matter for congratulation alike to Mr. Souttar and his colleagues who undertook this strenuous and urgent duty and to the authorities in Delhi and London who facilitated their recommendations.

MODEL INDUSTRIAL MEDICAL CENTRE

An excellently equipped medical centre has lately been opened at the works of Morris Motors Ltd. of Cowley, Oxford. It is one of two blocks covering a floor space of 7,000 sq. ft. which are devoted to welfare, the second block housing various clubs and athletic activities. The medical centre is in the charge of a full-time works medical officer, assisted by State-registered nurses, and it has been built and provisioned on what may be described as the Nuffield scale. It is a quiet, attractive building, with a surgery for dealing with minor injuries—serious cases of injury are sent to hospital—an *x*-ray department, a physiotherapy unit, dental and ophthalmic departments, rooms for the staff, an almoner's office, and a waiting-room (but the arrangements are such that waiting is reduced to the minimum). The aim of the centre is diagnosis and prevention. It is provided with an electrocardiograph, a four-valve *x*-ray apparatus with rotating anode tube and an attachment for tomography, apparatus for blood-testing, and other diagnostic aids. The treatment of injuries is also undertaken, and ultra-violet lamps and short-wave and other apparatus for physiotherapy are provided. The dental department has its own *x*-ray equipment and up-to-date anaesthetic outfits; the well-equipped ophthalmic department is staffed from the neighbouring eye hospital.

In the arrangements for dealing with workers at this centre, all accidents, however trivial, are reported to the surgery; all newcomers to the factories may undergo a medical examination with a view to direction to jobs suited to their physical capacity, and a card index is kept of the medical history of every employee. It is hoped that from this centre a useful contribution will be made not only to the industrial health of the workers at Cowley but, by mass observation of sickness under factory conditions, to the new science of social medicine, for which there is now a chair at Oxford. It is intended to equip the *x*-ray department for the mass radiography of chests, and all employees with signs of tuberculosis will be sent for sanatorium treatment. A close liaison is maintained with both insurance practitioners on whose lists these workers are and the staffs of the hospitals, and when it is discovered what is wrong with a patient he is referred for treatment either to his practitioner or to the hospital as the case may be. In the dental department the dental surgeon examines and advises workers free of charge, carries out any extractions or conservation work, and makes dentures in the new plastics, at normal insurance rates. In the eye department employees who wish to have their eyes tested first obtain the necessary vouchers, if they are members of the contributory scheme, entitling them to examination and prescription, and then they are expected to make arrangements with their own opticians for the supply of glasses. The whole of the medical department is a part of the welfare work of the Nuffield organization, and the medical officer maintains close touch with the welfare supervisor, the social secretary, and others on that side.

Research into Nutriment of Canteen Meals

Another interesting welfare department at Cowley, opened on the same occasion, is a food research department, a joint enterprise of the Nuffield organization and Barkers (Contractors) Ltd., who are responsible for operating the canteens at the works. A biochemist is in charge, a dietitian and a chef are on the premises, and the laboratory is equipped with centrifuges and other apparatus for investigating the composition of foods. Study is also made of the problems of cooking and service, which are important factors in communal feeding in view of the unstable nature of food after its preparation for the table. To ensure that canteen meals are palatable, satisfying, and in conformity with dietetic principles will be the task of this department, which will report daily on the number of calories served per portion. The laboratory, which will impose its own improved standards on the canteen managers, is believed to be the only one directly connected with an industrial canteen. One of its first activities is, by means of a mobile laboratory, to go the round of the canteens and make researches on the spot on the stability of vitamin C in food prepared by what may be called mass cooking. The Ministry of Food has co-operated in this venture, and it is hoped that a certain amount of academic research on nutrition may be undertaken.

TRANSFUSION ACCIDENTS AND DEATHS

The memorandum printed below has been drawn up by the Blood Transfusion Research Committee of the Medical Research Council for circulation by the Ministry of Health to hospitals of the Emergency Medical Service and to the Maternity Services throughout the country.

If following a transfusion the state of any patient gives rise to anxiety and it is felt that the condition can reasonably be ascribed to some effect of the transfusion, it is requested that the incident should be immediately reported by telephone to the nearest blood supply depot in the London area or regional transfusion laboratory in the Provinces, so that any necessary investigations can be initiated at the earliest possible moment. At the same time the hospital pathologist should be informed.

The conditions which it is particularly desired to investigate are haemolytic reactions, and reactions due to deterioration or contamination of the blood or blood derivatives used for transfusion. Although these reactions produce very variable clinical pictures it is suggested that the occurrence of any of the following symptoms or signs following transfusion should be notified: sudden grave collapse, acute severe backache, haemoglobinuria, or jaundice. Rigors and febrile reactions should not be notified unless they are accompanied by one or more of the above signs or symptoms.

The investigations in such cases would be made very much easier if a sample of the blood, or blood derivative, from the bottle given was available. It is therefore requested that a few c.cm. should be left in every bottle of transfusion fluid given and that this should be kept in the bottle for at least 24 hours, and not thrown away until the patient has been revisited and it has become clear that he has not reacted unfavourably to the transfusion. As a routine, therefore, every bottle should be recapped after transfusion and put in a cold place (in a refrigerator if possible). The giving apparatus should be removed and washed immediately in cold water as usual.

If for any reason it proves impossible to make immediate contact with transfusion headquarters it is requested that a sample of blood should be withdrawn from the patient under sterile conditions, using a dry syringe if possible, and divided between two dry sterile tubes and one dry oxalate tube (for blood culture and other examinations). At the same time a clean specimen of urine should be obtained from the patient and kept. In the ordinary way these specimens of blood and urine will be collected by the transfusion officer when he arrives to see the case.

CAMPAIGN AGAINST TUBERCULOSIS

Some information about the steps already taken by the Government in its campaign against tuberculosis, particularly the stage reached in the supply of miniature radiography units to local authorities, was given by the Minister of Health at a Press conference in London on April 29.

He said that with the aid of expert advisers a detailed scheme covering the application of the system of miniature mass radiography in all its aspects had been drawn up, and full information was being sent in a comprehensive memorandum (Memo. 266/T) to all local authorities responsible for the treatment of tuberculosis. At the same time these authorities were being given full particulars of the new scheme of allowances. Two of the new mass radiography machines had now been delivered. The first was being used to train operational teams. The second had been delivered to the Lancashire County Council. As more of these units were produced they would be allocated in the following order: L.C.C., Middlesex C.C., Surrey C.C., Wales (Welsh National Memorial Association), Staffordshire C.C., Leeds, Newcastle-upon-Tyne, Nottingham, Essex C.C., Portsmouth, Bristol, Manchester, Sheffield, Birmingham, Liverpool, Norwich, and Northamptonshire C.C.

At present about one machine a month would be delivered. It might, therefore, take at least a year before there was a network of mass miniature radiography units operating in the most populous areas of the country. It was hoped that eventually miniature radiography would be a part of routine health examinations. To begin with, arrangements would be made, as the units gradually become available in different parts of the country, to examine suitable groups

of people—ordinary healthy men and women—in places such as industrial establishments, offices, factories, or any place where large numbers of people could readily be assembled.

Only about three out of every 1,000 persons examined were found to be tuberculous and needing treatment. The miniature *x*-ray machines could photograph chests at the rate of more than 100 an hour, using ordinary cinema film. Each negative, only about one inch square, was later projected on a screen and examined by experts. Doctors could sort out the cases—perhaps 40 or 50 in every 1,000—where there was some suspicious sign which should be investigated further. In the small number of cases in which tuberculosis was diagnosed sanatorium or dispensary treatment would be recommended.

The Government had decided to provide special maintenance allowances, which would enable those persons found to be affected to give up work for a while and undergo treatment. These allowances would apply to everybody undergoing approved treatment, no matter through what means the diagnosis had been made. They would be administered by tuberculosis authorities as part of local health services, and would comprise "maintenance allowances" based on a standard scale and without any test as to means, to which might be added, at the discretion of the authority, extra grants or special payments towards commitments.

Allowances

The weekly allowances, to which Mr. Brown referred, are as follows: for a male applicant and wife (or female applicant with dependant husband) 39s.; for male or female applicant where the former rate does not apply 27s.; for dependants (other than wife or husband) aged 16 and over 12s.; 14 to 16 8s.; 10 to 14 6s. 6d.; under 10 5s.

Where the applicant is a person living as a non-dependent member of a parent's or other relative's household and is receiving treatment at home the allowance will be 25s., with additional payments if the person has dependants as stated above. To these will be added any special payments made at the discretion of the local authority.

The same rates apply to Scotland, where similar information has been given in a circular to local authorities.

Reports of Societies

ANALGESIA AND ANAESTHESIA IN OBSTETRICAL PRACTICE

At a meeting of the Section of Obstetrics and Gynaecology of the R.S.M. on April 16, Dame LOUISE MCILROY presiding, the discussion was on "Analgesia and Anaesthesia in Obstetrical Practice."

Dr. JOHN ELAM, who defined anaesthesia as relief from pain with loss of consciousness, and analgesia as relief without loss of consciousness, said that one of the essential things to remember before confinement was not to frighten the patient. Pre-medication was important, but should not make the patient too sleepy. When forceps was contemplated he had found potassium bromide and chloral helpful. The objection to barbiturates was that the patient on coming round was restless and perhaps uncontrollable. He acclaimed the virtues of the Oxford vaporizer, in which he used a mixture of trichlorethylene and ether. When it was necessary to use forceps in domiciliary midwifery he had felt quite safe with the Oxford vaporizer, doing the induction himself and then leaving the apparatus to the midwife. If there was overdosing with trichlorethylene labour was slowed down, but the moment administration was stopped the pains began to return, and within ten minutes were as strong as ever.

Prof. A. M. CLAYE spoke on the question of the effect of maternal anaesthesia and analgesia upon the infant, and summarized recent literature. He dealt in particular with the allegation that analgesics in labour, given in greater amounts than the pharmacological dosage, might be a factor causing anoxaemia with cerebral damage to the child. One extensive investigation, however, extending over 800 cases, suggested that cerebral injuries were due to mechanical factors—that is, faulty obstetrical manipulation—rather than to drugs given to the mother. His own conclusion was that the technique of administering anaesthesia and analgesia in common use in obstetrics required a great deal of learning. Probably the most fool-proof apparatus was Minnitt's. With the concentration of gas used it was virtually impossible to harm mother or baby. The success of more difficult methods depended on the acquisition of the necessary skill.

Dr. GRANTLY DICK READ said that he spoke as a general practitioner with an experience of thirty years' observation of normal and natural function. It was rather noteworthy that the Fellows of the R.C.O.G. probably attended only 1% of deliveries in this country, and yet it was they who continued to teach how obstetrics should be conducted. How many of them knew the phenomena of normal labour? It was assumed that normal labour was a painful process. He entirely disagreed. There were three types of labour: normal or natural, cultural, and abnormal or surgical. Cultural labour was the product of the institutions of civilization, which had introduced the woman to all manner of fears and tensions as she approached childbirth. If there was imbalance between the structures which received a stimulus and those which interpreted it, then normality and natural function were broken down. Fear and anxiety in this connexion did not persist among less cultured and more primitive races. It was this neurological factor which gave rise to the pain in normal labour. By eliminating fears *ab initio* a painless labour might be induced. Pain was dependent on certain tensions occasioned by inhibition of the function of labour. Painless labour did not occur in all normal cases, but the percentage was rapidly increasing, and as more and more midwives applied themselves to eliminate fear ante-natally and to teach the women the physical aspect of relaxation it would still further increase. By the teaching of relaxation, a certain readjustment of diet, and certain forms of exercise, combined with normal and reasonable ante-natal treatment, anyone who had the courage to try it out on 50 normal cases in succession would have an "eye-opener." He suggested more research into the psychological and the neuromuscular aspects of labour.

Mr. R. H. PARAMORE said that he found it extremely difficult to differentiate between the normal and the abnormal. There were borderline cases, and it was next to impossible to say what might happen. Childbirth was a laborious affair, involving much hard work during which the viscera were greatly compressed. No woman, in his opinion, should be submitted to a second stage of labour lasting longer than two hours, and in view of the shortness of the second stage in multigravidae one might well ask whether in the case of a first child one should wait so long. With the cervix fully dilated, extrusion of the child could occur only with great distension, and laceration of the tissues was common. He commended the use of spinal anaesthesia. No other method of anaesthesia to his knowledge had the same effect. Bleeding was much less with spinal anaesthesia than with general; and it had other advantages.

Dr. J. MICKIEWICZ gave the results of continuous pentothal anaesthesia in a series of 29 cases of Caesarean section, performed by Mr. Carnac Rivett at Queen Charlotte's. Anaesthesia was induced with 0.5 g. of pentothal in 10 c.cm. of saline; 2% pentothal was added from time to time to maintain the anaesthesia. It was usually found that the addition of from 2 to 10 c.cm. of the 2% solution at roughly 5-minute intervals was sufficient. The total dosage for Caesarean section was about 1.5 g. Coramine and oxygen were available in case of respiratory depression, but this had rarely been encountered. Atropine (1/100 gr.) was given one hour before operation. In this series there had been one maternal death on the fourth post-operative day, due to acute paralytic ileus, and there was one foetal death (on post-mortem examination the lungs were found to contain liquor amnii; this must have been due to premature respiration, not to respiratory depression). Dr. B. A. SELLICK gave particulars of 251 cases at Middlesex Hospital in which intravenous pentothal had been given. They had included 33 cases of surgical induction, 95 of forceps delivery, 5 of post-partum haemorrhage (manual removal), 20 of Caesarean section, and 91 of perineal laceration. Two maternal deaths occurred—one after post-partum haemorrhage and one after Caesarean section—and there were 7 stillbirths. Six of the mothers and 10 of the infants required resuscitation. Miss YOUNG gave some account of the training of midwives in the administration of gas-and-air anaesthesia. Out of 51 midwives of the Middlesex C.C. this last year, 25 were so trained. Captain A. C. FROST, R.C.A.M.C., mentioned the value of paraldehyde given per rectum. Dr. RUSSELL said that the ideal anaesthesia was one in which quick induction was possible, and in which the patient could come out of the anaesthetic quickly.

Dr. LETITIA FAIRFIELD referred to a collection of statistics of 950 cases of Caesarean section, drawn from 20 different units in the course of six years. There had been six deaths from anaesthesia, and in all the six it was spinal anaesthesia which had been used. Everything was being done in L.C.C. hospitals to teach relaxation and the practice of normality, and to instruct the midwife in these respects, but, of course, this had been given varying emphasis in different hospitals. She had seen many women who had been carefully trained in relaxation methods, and in some cases the women had had remarkably painless labours, but in others the labour had been very painful. While relaxation was important, she suggested to Dr. Dick Read that he should not "oversell" it. The discussion ended with a final brush between Prof. CLAYE and Dr. DICK READ, the former suggesting that Dr. Read did the gynaecologists less than justice if he thought that they did not consider the psychology of their patients. Dr. Dick Read replied that he was not offering a panacea for all labours. Neither his own method nor any other was successful in all cases.

Correspondence

Private Practice

SIR,—On the assumption that all the population is insured against sickness and accident (paragraph 431 of his report) Sir William Beveridge makes the following observation: "The possible scope of private practice will be so restricted that it may not appear worth while to preserve it." This is the view of an economist, and it seems to me that, from this point of view, the position of private practice alongside a complete State Medical Service, if this takes a form acceptable to both doctors and patients, has perhaps not been sufficiently studied by our profession.

First, what is meant by private practice? Under the State scheme the patient's first and most intimate contacts will be with general practitioners. Behind them, however, there will be consultants, specialists, dentists, nurses, masseuses, pharmacists, opticians, instrument makers, etc. Will the private patient be allowed to choose for which of these services and the goods they supply he will pay, or will it be a case of paying for them all? If the former privilege is allowed, I suggest that many patients who would prefer to employ a G.P. in a private capacity will be less desirous of paying fees to the numerous shadowy, often unknown and fearsome, figures who, to them, work in the slightly sinister background of hospitals and laboratories. In the latter case, during the course of a long and expensive illness, many private patients will surely decide that their financial limit is reached, and they will seek the refuge of the State service.

It must be remembered that every private patient will be paying twice for any service or remedy he receives, and that the number of these patients will be much smaller than under present conditions. It is not, therefore, unfair to assume that the level of fees of private patients will be higher, and this for two reasons. First, either because they will belong to the wealthier classes, or, secondly, because they will be difficult, contentious folk, who take up more of our time than the average patient over non-essential details. My own experience has been that many patients who are entitled to medical benefit under the present scheme, whatever their parents' or husbands' income may be, do not hesitate to claim their rights: this has been quite noticeable during the present emergency. There is also an increasing tendency for the more prosperous section of the community to subscribe to the extended benefits contributory scheme or some similar organization. A man earning £1,000 a year, with a wife and two children, pays £300 a year in income tax at present rates, and I suggest that up to this income level very few people will be private patients; and even above it many will take advantage of a State service. Examination of income-tax figures for 1941-2 shows that only 2.1% out of fifteen million people assessed for income tax return gross income of more than £1,000 per annum.

It would appear, therefore, that the retention of private practice in a 100% insured population is likely to be a small asset to general practitioners, and much smaller to other members of the profession and to the members of the auxiliary services mentioned above. Furthermore, it will almost certainly be a diminishing asset for this reason. Practically every member of the community starts his or her career on a small salary or wage, and will at this period take advantage of the comprehensive free health service provided by the State. We believe that this will be a good and satisfactory service, so that as their prosperity increases such people are unlikely to change over and become private patients.

I suggest, therefore, that if 100%, or even 90%, of the population is completely insured the retention of private practice should have no place in our financial negotiations with the Ministry of Health. If it is allowed to intrude the Minister is almost certain to use it as a means to whittle down both our freedom and our remuneration, and it may even seriously prejudice any claim to compensation for the capital value of practices.

One other point not connected with the economic aspect. Many of us believe that the medical profession has lost status and prestige with the community. Discussions with the laity have led me to the conclusion that this is to some extent due to the widespread conviction that the contract or institution patient does not get so much care and attention as the one who pays. The justice or injustice of this conviction is impertinent to the argument; it undoubtedly exists. If private practice is permitted I feel it would be to our advantage to eliminate the possibility of this accusation by not allowing any doctor to do both types of practice. In conclusion, I have been in general practice for 23 years, and nine-tenths of my professional income is provided by private patients' fees ranging from five shillings to one guinea.—I am, etc.,

Birmingham. F. B. WINFIELD.

"Capacity to Pay": A False Premise

SIR,—From the tone of certain recent statements and articles it may well be deduced that the future of the medical services in this country has been predetermined by bureaucracy, and that our profession will now be expected to accept its scheme as a *fait accompli*. Whether this is so I have no means of telling, but it is abundantly clear that the underlying motive for any change is a political one, which bears no relationship to any real need of the populace or to the outcome of any unbiased inquiry into the quality of the medical services that exist to-day. We all know that the easiest diseases to cure are those which the patient has not got, and yet we are acquiescing in this spurious diagnosis and allowing bureaucracy to foist upon us its quack remedy so that it can gain a false credit for cure.

It cannot be denied that there is a suggestion of fanaticism in the urgency with which the "reformers" pursue their object—a fanaticism which would be worthy of an altruistic ideal—but let us not be misled, for the motives underlying most political moves are far removed from altruism. The politician, whether in Parliament or outside, cannot rid himself of the human frailties which hanker after personal publicity, cheap popularity, acquisition of power. And so, instead of a scientific assessment of the pros and cons of the case, we find the whole issue prejudged and bolstered with false statements which are made to appear axiomatic.

As an example of this I quote the opening paragraph of a discussion, or rather a dictate, on a national health service which appeared in a responsible journal having a fairly wide circulation among a presumedly intelligent section of the public. It ran: "Twenty-five years hence Britons will shudder as they recall the incredible situation which existed, say, in 1943, when medical treatment depended on the capacity of the individual to pay for it." We, as doctors, are in a position to know how false such a statement is, but the great majority of the readers, being lay people, are likely to regard it as the truth. On the day that statement appeared I walked through the wards of a hospital and saw patients being treated with hundreds of pounds' worth of radium, some having *x*-ray therapy from most expensive plants, others having costly series of injections, many recovering from extensive operations followed by skilled nursing and after-care, and so on. The point is that these patients will either pay nothing at all or at most a small contribution to the actual cost of their board and lodging in the

hospital, and this is multiplied ten thousand times throughout the country. In the face of all this we are asked to believe that "medical treatment depends upon the patient's capacity to pay for it." The most generous interpretation would be to assume that the journal really thought that it was living up to the quotation with which it emblazons its title: "The assertion of the truth." But a Press which is so ill informed has no moral right to express opinions for the guidance of others.

Since the war started the wildest statements have been made concerning medical organization which, while good propaganda for a State Medical Service, have no relation to the facts. I have conscientiously looked back over a surgical career of thirty years and can honestly say that in that time I have not known any patient lack adequate surgical treatment on account of his incapacity to pay for it. In a small number of cases there may have been other reasons (some a proper subject for sociological attention) which led to incomplete or unsatisfactory treatment, but none which could be laid at the door of our profession, and certainly none dependent upon a patient's inability to pay. This is a serious statement made after long deliberation.

What I believe the Briton of twenty-five years hence really will shudder at will be the dogmatic nature of the orders and control of treatment now bureaucratically forced on the profession, for the scientific basis of many of these "standardized" treatments will by then have been shown to be utterly false, if the experience of the past is to be any guide to the future.—I am, etc.,

London, W.1. NORMAN C. LAKE.

Unity in the Profession?

SIR,—In our present situation this is an ideal impossible of realization since there are two opposite interests: (*a*) the general practitioner and specialist group; (*b*) the public health services, pensions services, etc. The latter (*b*) are State officers and their natural inclination must be for a universal State service. They have entered such services because they were attracted to the study of public health or they desired a more regular life than either that of the general practitioner or that of the specialist. We of (*a*) have no quarrel with (*b*) in their choice of work, have collaborated with them for years, and hope to continue to do so.

It is, in my humble opinion, imperative that in the vital issues at stake all of (*b*) should be excluded from our deliberations. They will not help us, but they can hinder us in no small way. We (*a*) are fighting for our ideal—a panel system with a definite income limit, with freedom of medical treatment both for our patients and for ourselves, and no interference from any source. This panel system, as envisaged by the B.M.A., adequately supported, will provide an ideal service for the nation, and what more can the people or the Government ask of us? I repeat that in this fight our activities cannot—they must not—be hindered by those of a different ideology in our ranks. We must be rid of all such. We can fight and, I trust, win our battle.—I am, etc.,

Bradford. DONALD WATSON.

Preventive Medicine

SIR,—Your leading article on "Hours of Employment and Health" (Dec. 26, 1942, p. 756) and the lecture of Prof. J. A. Ryle on the "Science of Health" (p. 745) need to be considered together. You show how the long hours of work adversely affect the health of the workers, and it has long been known that fatigue is the greatest single factor hindering production. Prof. Ryle stresses, as he has done before, the value of preventive medicine.

To allow preventive medicine full scope we have to consider politics and medicine. We know that we can even now, though we frequently fail to do so, prevent many deadly diseases and much ill-health, but Prof. Ryle tells us that "it is becoming more apparent that in the future the emphasis of medicine will be increasingly upon its preventive and protective aspects." This may be true of the future, but what of the present? Can we really say that we have yet passed the stage of palliative medicine, reached that of curative medicine, and see preventive medicine in all its glory just down the road?

Men of great achievement find it difficult to attune their outlook to that of ordinary folk; and while Prof. Ryle knows how elementary is our present knowledge of medicine and how numerous are the diseases we can neither prevent nor cure, the general public, who take a great interest in the medical journals, have not this advantage. From this constant reference to the future position of preventive medicine I am afraid that people may come to believe that the science of medicine has advanced further than is really the case, and it might be in the national interest if it were to be more plainly understood how very limited is the sphere of preventive medicine at present. At the same time political considerations should not be allowed to stand in the way of allowing "preventive medicine" full measure of freedom in its own sphere. Hours and conditions of work in factories urgently need changing. The delivering of uncovered bread is a danger and our milk supplies might receive attention. These things could be done now.—I am, etc.,

New Barnet. JOHN ELAM.

Treatment of Head Injuries

SIR,—Dr. T. Rowland Hill has drawn the attention of your readers to the fact that the recovery of working capacity is only one aspect of medical prognosis. He quotes my statement to the same effect. I am delighted to accept his correction of my nomenclature; his reproach of illogicality, however, seems to go too far.

Dr. Hill emphasizes the importance of the differentiation between traumatic (psychogenic) anxiety and the mental state directly produced by cerebral injury. I fully agree with him and with his statement that this differentiation may be very difficult. Post-traumatic anxiety referring to the accident is comparatively rare after head injury, and it is relatively more common after accidents with no, or with mild, cerebral injury than after severe ones—probably owing to the length and depth of unconsciousness of the latter. Unspecific anxiety symptoms can often be traced back to experiences before the head injury, or to subsequent events (for instance, experiences in hospital), or to circumstances only indirectly connected with the head injury. In practice it is often difficult to assess the exact aetiology. I therefore counted in my study on headache all headaches following head injury, disregarding all, even the most obvious, clues to additional causes, psychological or physical. Ritchie Russell's figures for the occurrence of headache after injury can also be regarded as "post" and not necessarily as "propter." This point must be remembered if one forms an opinion about the frequency and severity of the after-effects. It is worth recalling that A. J. Lewis, comparing post-concussional and other neuroses, found a very similar incidence of symptoms. In effort syndrome, headache and giddiness (those usual post-concussional symptoms) were found in 72% and 78% respectively by P. H. Wood.

Headaches seemed to me the symptom most suitable for a statistical study of the after-effects of head injury, since they are by far the commonest symptom, and I have seen very few cases which complained of post-concussional symptoms but were free from headache.

Dr. Hill begins his examination with the question, "Do you feel the same man you were before the accident, or have you never quite recovered from it?" I, personally, try to refrain from leading questions, and this may account for the difference in our impressions. But I wish to repeat that the figures in my follow-up study on headache are based on direct questions. After some general inquiry about his state of health, each patient who appears in the tables was asked, Did he have headaches or giddiness? And did he sleep well? (Information about his concentration and fatigue was not gathered by direct questioning, but by an inquiry into his occupation or work.)

Jefferson has aptly formulated that we should treat each case of head injury as a potential neurotic. It has been my privilege to carry this suggestion into effect. Thanks to the co-operation of surgeons and neurosurgeons, these cases were treated from the first day with a view to preventing neurotic after-affects. The figures on the occurrence of headache and on the loss of working time may have been influenced by this co-operative effort.—I am, etc.,

London, N.W.7. ERIC GUTTMANN.

Vitamins and Physical Fitness

SIR,—I am criticized by Dr. A. A. Harper and his colleagues (April 17, p. 487) for "quoting only general experience as evidence" in contrast to their own "careful statistical examination." This criticism presumably refers to my observation that their recognition of simultaneous improvement in resistance to infection and gain in physical fitness is opposed to general experience. I had almost written "universal" not "general," but refrained out of deference to the opinion expressed in their article. Universal experience would, I presume, represent statistics *in excelsis*. The conclusions of Dr. Harper and his colleagues were based upon an experiment conducted upon 69 subjects over a period of 21 weeks. I have before me the report of an experiment undertaken at the request of the Ministry of Health to discover the effect on London school children of taking a daily pill containing 1 mg. of vitamin B_1, 50 mg. of vitamin C, 600 international units of vitamin D, 4,000 international units of vitamin A, 2 mg. of riboflavin, and 20 mg. of nicotinic acid amide. The experimental subjects numbered 455; the work was conducted over a period of seven months. The conclusion was, "No measurable beneficial effect." I am a simple-minded man and I do not see how both these statistical results can be correct.

Dr. Harper and his colleagues direct my attention to the claim of the R.A.F. breath-holding and 40-mm. tests to afford indication of the resolution and power of endurance of the subject. The intention of the medical experts of the R.A.F. is to test the suitability of candidates as pilots. And whatever the rationale and criteria of their procedures their *ex cathedra* pronouncements must be accepted. They test endurance. Endurance of what? Presumably to tolerate the exceedingly unpleasant sensation of asphyxia. This doubtless is an accomplishment of some advantage, and it is not for me in my ignorance of aviation to question its validity as a requisite for the duties of a pilot. But is that "physical fitness"?

Apparently the majority, if not all, of their subjects demonstrated their potential ability as pilots. And all the subjects with whom I have been in contact exhibited unsuitability. Even I, with my ignorance of matters statistical, can see that such a coincidence strains credibility beyond the most generous limits. There must be a better explanation. Can it be that the atmosphere in which the R.A.F. tests are performed must be favourable to the production of that tranquillity which ensures stolidity and stabilization of the nervous system, and that in the ability to create such an atmosphere I am deficient? Is that the conception of "physical fitness" as this term is generally understood? (I have reluctantly again to employ the suspect "generally.")

I venture to assure Dr. Harper and his colleagues that I am well aware that the achievement of athletic prowess depends on many other things besides the general state of nutrition. A good many; some still elusive. But every little helps; and if the administration of vitamins could be shown to increase "physical fitness," even would-be world's champions would not disdain their use. Had Dr. Harper and his colleagues discovered an unequivocal improvement in the post-exercise deceleration test to follow their administration I should have been impressed. But, unfortunately, this was not forthcoming.—I am, etc.,

London, W.1. ADOLPHE ABRAHAMS.

Lupus Erythematosus

SIR,—Although I am primarily responsible, I believe, for the view that lupus erythematosus may be a cutaneous reaction to acute or chronic streptococcal infection,[1] I cannot subscribe to the opinion that this is true of all cases, as Dr. F. Glyn-Hughes and Dr. A. M. Spence suggest in their letter (April 10, p. 460). When I first propounded what has been described as "the streptococcal theory" I was subjected not only to criticism, which was welcome, but also to misrepresentation, both in this country and abroad. In France particularly I was accused of holding the view that lupus erythematosus is always of streptococcal origin. I do not believe this, nor have I ever said it. I am satisfied that in some cases it may be a toxi-tuberculide, and I think that the relative incidence of the streptococcal and tuberculous cases may vary in different countries. I have discussed the whole question elsewhere.[2 3]

By a careful study of the clinical history, a thorough physical examination, a consideration of the type of eruption present, and laboratory and radiological investigations, it is usually possible to decide with some certainty to which group of cases a patient belongs, but I admit that it may be difficult or impossible in some instances. The decision is important from the therapeutic standpoint, for, as I have pointed out,[3 4] the sulphonamide group of drugs, which in my hands has proved of value in many streptococcal cases, has been ineffective, as one might expect, in the tuberculous ones. Conversely, my impression is that injections of gold compounds are more likely to give satisfactory results in the latter than in the former.

In cases suspected of being streptococcal in origin it is important, as Dr. Glyn-Hughes and Dr. Spence indicate, that gross foci of infection should be dealt with before sulphonamide therapy is instituted. I have already stressed[2 3] the susceptibility of many patients with lupus erythematosus to sulphonamides. Severe febrile reactions, with temporary exacerbation and extension of the eruption and swelling of the lymphatic glands, are not uncommon, and I have given reasons for distinguishing reactions of this kind from so-called "drug fever." I would repeat the warning I gave then: "It cannot be too strongly emphasized that the indiscriminate use of the sulphonamides is fraught with danger."

The clinical evidence, apart from the positive results with guinea-pig inoculations obtained by several observers, that a tuberculous toxaemia is responsible for the eruption in some instances seems to me incontestable. The following very remarkable and tragic case will serve as an example:

A female child aged 7 was diagnosed as having lupus erythematosus associated with extensive tuberculous cervical adenitis. No family history of tuberculosis obtained. Breast-fed until 9 months old. Skin first affected at the age of 10 months on the malar regions when she was at Folkestone in the summer. The parents observed that the eruption was clearly provoked and aggravated by exposure to sunlight. Until the winter 1940–1 it had always cleared completely during the winter months, only to relapse in summer. In June, 1940, the child had an attack of German measles, which was followed by right-sided cervical adenitis with subsequent abscess formation. The tonsils were first removed, and an operation on the abscess and glands then performed. After the operation the eruption completely disappeared, although the child was lying out of doors and was exposed to sunlight. It gradually returned, and in the following November enlarged glands appeared around the operation scar, the eruption becoming much worse and more extensive.

When I saw her (Feb. 11, 1941) there was typical lupus erythematosus with the bat's wing distribution on the cheeks and nose: elsewhere it was extensive, involving the scalp, neck, ears, back, and arms. There was a large projecting mass of glands around the scar on the right side of the neck, and there were several palpable ones on the left side and below the chin. I agreed that operative treatment was indicated. A block dissection of the upper deep cervical group of glands on the right side was performed, and some four or five on the left side and two in the submental region were removed. I saw the child again eleven weeks after the operation. The lupus erythematosus had strikingly improved, being much paler and less active everywhere. There were still, however, palpable glands in the neck, the temperature was over 100° F. and the pulse rapid, there were some albuminuria and swelling of the ankles. I thought it probable that the bronchial and abdominal glands were involved. I advised treatment in a sanatorium.

In the following July the physician under whose care she came agreed that she was a case of lupus erythematosus of tuberculous origin, and said she had improved, but still had evening pyrexia. He thought that there was abdominal tuberculosis. He has recently informed me that he had heard from the mother that the child died in December, 1941, from, he thought, generalized tuberculosis.

This case is remarkable in several of its features. Lupus erythematosus is rare in young children, and if, as seems likely, the original eruption, which appeared on the cheeks in summer-time from the age of 10 months, was of this nature, the case is unique in my experience. At all events, the fully developed eruption, as I saw it, was unquestionably lupus erythematosus, and an important point is that, although very extensive, it was not of the type usually seen in the so-called lupus erythematosus disseminatus, in which the recent acute lesions resemble those of erythema multiforme and there is often streptococcal septicaemia. On the contrary it was of the indolent hypertrophic type with thick adherent scales and marked

[1] *Brit. J. Derm. Syph.*, 1915, **27**, 365.

[2] *Lancet*, 1929, **2**, 483.
[3] *Brit. J. Derm. Syph.*, 1941, **53**, 1, 33.
[4] *Lancet*, 1940, **1**, 583.

follicular hyperkeratosis—the type, in fact, that I usually associate with the tuberculous form of the disease.

To sum up, if one considers the following points one must, I think, logically conclude that in this case the lupus erythematosus was a toxi-tuberculide: (1) the rarity of lupus erythematosus in young children, and the unusual severity and extent of the tuberculous adenitis; (2) the complete but temporary disappearance of the eruption after the first operation on what was at that time presumably the main and primary focus of infection in the glands on the right side of the neck, although the child was freely exposed to sunlight, which previously had always provoked an outbreak; (3) the relapse of the eruption associated with involvement of other glands on both sides of the neck and in the submental region; (4) the striking and more lasting improvement in the eruption after the second and more extensive operation; (5) the fact that the eruption, although very extensive, was not of the kind usually seen in the disseminate form of the disease, many cases of which have a severe and often fatal streptococcal septicaemia.

—I am, etc.,

H. W. BARBER.

Collapse Therapy

SIR,—Dr. Gregory Kayne's warning against the misuse of artificial pneumothorax treatment in pulmonary tuberculosis is timely. The number of cases of chronic empyema, pyopneumothorax, bronchopleural fistula, and gross displacement of the mediastinum and its contents following artificial pneumothorax treatment that one now meets is appalling. Nor is adhesion section without its risks. At one time, not so long ago, such distinguished practitioners as Mr. Morriston Davies and the late Dr. F. G. Chandler abandoned the procedure, and even now, with the much-improved technique, failures are not unknown.

Unfortunately, one cannot tell beforehand whether any particular A.P. is going to be a success or otherwise; sometimes one obtains a delightfully selective collapse in a very unpromising case, which means that many more have to be attempted than can be persevered with. But, as Dr. Kayne writes, it should be axiomatic that ineffective pneumothoraces should be abandoned at the earliest possible moment.

The public has been so misled by popular propaganda on behalf of physical interference and chemotherapy that patients are now querulous if some such procedure is not undertaken for them. The more drastic the procedure the better pleased the patient; the proud possessor of a Monaldi pump is the envy of the institution. "Am I then to have *no treatment*?" is the disappointed complaint one hears from one's patients when told that such proceedings are unsuitable or unnecessary; and they cannot be convinced that, when all is said and done, the basis of the treatment of tuberculosis remains the slow and methodical building up of the individual's resistance by the sanatorium regime, and that physical interference, while excellent for the cases that need it, always carries additional risks.—I am, etc.,

Chichester. PATRICK HEFFERNAN.

Pulmonary Disease in Miners

SIR,—May I be permitted to comment on the leading article (July 11, 1942, p. 43) entitled "Pulmonary Disease in Miners." When this pathological lung condition was first described by the War Pensions Appeal Board at Auckland, N.Z., in connexion with war gas sequelae (*N. Zealand med. J.*, Dec., 1931, and later issues), we suggested the name "pulmonary degenerative changes" or "P.D.C."

While objections can be urged to both names, it is important that an attempt should be made to convey the various causative factors as well as the associated organic effects that result from the condition. It should be borne in mind that it is still uncertain how many of the associated symptomatic effects are brought about. It is also desirable to envisage the essentially chemo-electrical causation in all types of cases that are due to chemical trauma, be they dissolved gases or dust. I would suggest "chemofibrosis" if the condition is to be approached from the angle of causation in such types. The fact that a somewhat similar degenerative lung condition may arise from constitutional factors should not be overlooked. The merit of "P.D.C." lies in the fact that it can be readily qualified by the addition of words descriptive of either the causation or the resulting symptomatic effects.

While it is likely that impairment of the ciliary defence mechanism is largely responsible for associated infections, the causation of the dyspnoea is uncertain, though it has been narrowed down by later workers. The contribution of Sievers, Enzer, and Becker (New York) would appear to exclude anoxaemia to a large degree. Parkinson and Hoyle (London) have demonstrated the existence of radiological evidence of right heart abnormality. The San Francisco work (Reichert and others) demonstrates the possible importance of the collateral pulmonary circulation in cases where the heart factor does not appear to be dominant. The studies of the Auckland workers demonstrate the raised incidence of lung degenerative changes in a gas-exposed group as compared with other soldiers who could have had no exposure to chemicals. We also described the "right-heart" type of cardiac response to effort and the variation in the "distension-collapse level" in the external jugular vein as an indication of pulmonary artery pressure. The retinal engorgement that occurs is frequently overlooked, and also the fact that the pituitary gland, with its many trophic metabolic functions, could not fail to be involved in some degree. It should be borne in mind that, at present, we have no satisfactory explanation of the hypertrophic digital effects that are not infrequently observed. In view of the authoritative standing of the M.R.C. its further reports will be awaited with considerable interest.

—I am, etc.,

Auckland, N.Z. W. N. ABBOTT.

Gastro-enteritis in Infants

SIR,—In the recent communications on this subject in the *Journal* I have not noticed any reference to infusion into the bone marrow. This method is so simple and effective, and in my experience infusion into a vein of a dehydrated infant so difficult and the subcutaneous route so uncertain, that I thought a note on the method might be useful.

The site of choice in an infant is at the junction of the upper and middle thirds of the superficial surface of the tibia. A Tocantins needle, which is a stout, wide-bore, double hollow needle with a stylet 2½ cm. long, is gently made to penetrate the bone after preliminary infiltration of skin and periosteum with procaine—a sense of feel indicates when the bone has been pierced—the stylet is then removed, and a 1- or 2-c.cm. syringe half full of saline is attached to the inner needle, through which, if properly inserted, bone marrow can be withdrawn into the syringe by working the piston backwards and forwards. The syringe and inner needle are now removed, taking care in doing so that the outer needle remains *in situ* and is filled with saline to prevent an air-lock. An intravenous infusion apparatus containing the fluid to be infused—saline, glucose, or what you wish—which has been got ready beforehand, is immediately attached to the outer needle and the container raised to between 3 and 5 feet and the drip mechanism regulated to 40 drops a minute. It will be found that the fluid runs in quite readily at this speed—a pint can be infused in this way in about 4 hours. The needle maintains itself in position without fixing and the limb is lightly splinted.

I have treated a number of cases by this method and not found any difficulty. An infant who died 80 days after infusion by this method showed no damage to the bone or bone marrow at necropsy.—I am, etc.,

Redhill, Surrey. L. J. BARFORD.

Tube Grafts in Cleft Palate

SIR,—As so often happens when diametrically opposite views are strongly expressed, I find that Major M. C. Oldfield and I are not talking about quite the same thing. In his reply (Dec. 12, p. 706) to my letter he speaks of one end of the tube graft being "attached to some part of the upper extremity or chest." Therein I quite agree with him that such a procedure is little short of barbarous in its acute discomfort to the patient. If, however, Major Oldfield would try attaching one end of the tube graft to the inner surface of the upper lip first, before swinging it into the mouth, I think he will come to agree with me that no pain whatever is occasioned the patient and that the method often serves a useful purpose in properly selected cases, both civil and military, and will enable him to effect restorations for certain patients for whom he could otherwise do nothing. Post-operative sedatives are never necessary or even requested, and the whole series of stage operations are done under local anaesthesia.

There is nothing very new or original in the use of tubed pedicle grafts that they should call forth what Wilfred Trotter termed "the most quickly acting antigen to science"—a new idea. They were described, used, and portrayed by Taliacotius (1546-99) exactly in the manner envisaged by Major Oldfield—not, so far as I know, for the palate, but for facial and nose restorations—the intervention of one additional simple stage (to the lip), and what a difference!—I am, etc.,

Wellington, N.Z. H. P. PICKERILL.

Mitral Systolic Murmurs

SIR,—Probably every second of every day some doctor somewhere is confronted with a mitral systolic murmur, and he has got to do something, or nothing, about it. That is my excuse for again referring to this subject, so vitally important to both the doctor and the patient. Purely destructive sarcasm such as is contained in Dr. D. S. Lewis's criticism (April 10, p. 459) of my observations on Dr. Evans's article, in which he avoids the issues raised in the rest of my letter and picks out one of a pair of twin postulates indissolubly bound together while refraining from mentioning the other, merely still further fogs the issue and gets us nowhere.

What are these two postulates of Dr. Evans, and how does Dr. Lewis deal with my quotations of them, which the latter says proves my fogged state of mind and accuses me of dwelling in a "*reductio ad absurdum* of my own making"? They are:

1. "When the murmur is decidedly louder in the upright position it is the innocent kind"; and
2. "*In instances in which a trivial* mitral systolic murmur becomes louder in the reclining posture, *and in which a murmur develops at the base of the heart and particularly in the pulmonary area*, the innocent nature of the murmur can be presumed."

I have italicized the words that Dr. Lewis accuses me of "altering or ignoring," which he says "changes entirely the meaning and significance of the paired quotations, besides disproving the charge of contradiction in terms implied by him." The only alteration I have been guilty of is substituting the word "when" for "in instances in which," and "when" is obviously much shorter and means the same. As to my omissions on which Dr. Lewis lays so much stress, they can only mean this: that if either he or Dr. Evans finds a "trivial" mitral systolic in a patient standing up, and they then lay him down and find that the murmur is louder and that another murmur is superadded, they are at once satisfied that these murmurs are "innocent." Why? It may be so, but I should like to know what causes the murmur and why it is "innocent." It is no good saying that the cause of the murmur is unknown and therefore does not matter. And what is a "trivial" murmur? A "soft" or "barely heard" one? But soft ones are often much more pathologically significant and dangerous than loud harsh ones.

In "M.R.B.1," the guide book for medical boards, that part alluding to "Heart (Diseases of the)," and presumably drawn up by competent cardiologists, says, "In all cases the heart should be examined whilst the man is standing and also whilst he is lying on his left side, otherwise some cardiac murmurs are difficult to detect." So evidently some notice has to be taken of these murmurs. Anybody talking about "innocent" murmurs should drop sarcasm and dogmatism and give his reasons for calling them so by advancing some physical cause for their occurrence. Broadbent mentions one—i.e., "A spurious murmur (mitral systolic) can be produced by compression of the edge of the lung by the ventricular systole." That, at any rate, gets us somewhere.—I am, etc.,

H. S. GASKELL, M.B.

Interstitial Emphysema during Labour

SIR,—Dr. Roger Stanley's description (April 17, p. 477) recalls to my mind a very similar but milder case. Eight years ago my niece, aged 24, was delivered of her first infant without much difficulty. Three hours afterwards her husband called me up, and said that the left side of her face and neck and down on to the thorax was "all swollen up." I asked him to palpate it, and on returning he replied that it "crinkled and crackled." His doctor called in a Queen Charlotte's consultant, who declared that he had never seen the like. My niece had no cough, but for the last two months had had severe albuminuria, and was in consequence kept on a very meagre diet. In about a week all the emphysema had disappeared. No trouble was discovered in the thorax, and since then she has had another child and has had excellent health.

Every endeavour I have made to discover the cause of this disorder has been unavailing. The condition is so rare that I felt that my case should be recorded also.—I am, etc.,

Telford. VAUGHAN PENDRED.

Trichlorethylene Anaesthesia

SIR,—I was much interested to read Dr. Philip Ayre's valuable letter (April 17, p. 489), and fully agree with his conclusions. I would like to suggest a possible answer to the question he poses at the close of his letter—namely, why the respiratory rate increases during trichlorethylene anaesthesia.

I have given trilene on 150 occasions on an open mask on lint as *sole* anaesthetic in operations ranging from tonsillectomy to gastro-enterostomy. This technique is not advisable for general use, but it seemed to afford the most convenient way of observing the effects of this agent uncomplicated by the simultaneous use of other agents such as pentothal, nitrous oxide, etc. Premedication in adults was usually morphine 1/4 gr. and atropine 1/100 gr. There is rarely any overbreathing in stages 1 and 2 of the anaesthesia, and I have only observed excitement, cyanosis, and hyperpnoea in the anaesthetic-resistant type.

The tachypnoea begins when the patient has entered stage 3, plane 1, of anaesthesia, when the greatest concentration of the anaesthetic is being administered to produce saturation. The respirations are *shallow* and rapid, and are often followed by a period of apnoea, which ends spontaneously, as I have seen on several occasions, though I prefer to restart the breathing by gentle compression of the chest. I have seen typical anoxic convulsions at this stage in one case. The pulse remained regular, full, and unchanged in rate during this apnoeic period, and I did not observe cardiac irregularities except on one or two occasions. I did not intubate these patients, but always inserted an oral airway.

When stabilization in stage 3, plane 2, is achieved the rate of respiration usually settles down, but remains about 30 per minute, and, of course, at this stage the quantity of anaesthetic supplied is lessened. I tried giving CO_2 to ward off apnoea, but this only produced deep, rapid respirations, and did not prevent the onset of apnoea, which was longer in duration when it did occur. I then tried administering oxygen in a steady stream under the mask as soon as stage 3, plane 1, was entered, and found that in most cases this prevented the onset of apnoea and kept the respiratory rate within reasonable bounds.

I believe that the explanation of these facts is as follows. When the anaesthetic concentration in the blood and tissues reaches a certain level, a varying degree of histotoxic anoxia ensues. This causes the rapid, *shallow* respiration of oxygen lack, resulting from anoxia of the cells of the respiratory centre. Addition of CO_2 causes increased fatigue of the respiratory muscles, and increases the anoxia. As a result of the tachypnoea, carbon dioxide is washed out, the respiratory stimulus lowered, and apnoea follows and persists until the blood CO_2 rises sufficiently to stimulate the respiratory centre and restart breathing. This should not be waited for, as the spontaneous resumption depends on the basal metabolic rate, the amount of reserve of oxygen, and the state of the cardiovascular system.

This explanation fits in with the fact, which Dr. Ayre emphasizes in his letter, that administration of plenty of O_2 with the trilene will prevent the onset of tachypnoea, and I believe that this should be a routine procedure with this anaesthetic. For administration of 4 litres of oxygen a minute, as Dr. Ayre recommends, a Coxeter's dry flowmeter would be required, since the rotameter type is calibrated to deliver only 2 litres a minute.—I am, etc.,

Nelson, Lancs. T. D. CULBERT.

Foot-and-Mouth Disease in Man

SIR,—In reply to Dr. I. C. Monro (April 24, p. 520) I can add to my remarks in my letter of March 6 only that convalescence was not complete for 3 to 4 weeks, the lesions resolving slowly but ultimately clearing up. There was no

evidence of nail involvement or otherwise on the patient's body.

The diagnosis was not absolute, and without laboratory support this can only be tentative. But I, personally, have never seen a Vincent's infection with anything quite like the appearance of the lesions in this patient's mouth, or even, more notably, the intense, peculiarly penetrating and sickly sweet smell which dominated all other signs.—I am, etc.,

Dingwall. KENNETH I. E. MACLEOD.

Chemical Luminescence Test for Blood

SIR,—With reference to the article by Dr. John McGrath entitled "The Chemical Luminescence Test for Blood" in your issue of Aug. 8, 1942 (p. 156), it should be pointed out that the claim that the test is specific for blood is not supported by facts. To give only one example, copper salts give a positive test. Verdigris, which is often a constituent of paints, gives even greater luminescence than blood stains. The test appears to be of a similar nature to the benzidine test and the guaiacum test, and does not appear to have any particular advantage over them in the routine examination of blood stains. It has further the disadvantage that the test has to be carried out in the dark, and does not facilitate the disposal of large numbers of cases.—We are, etc.,

S. RAJAGOPAL NAIDU,
Chemical Examiner to Govt. of Madras.
Madras. N. PITCHANDI,
Assistant to Chemical Examiner.

Research in the Continental Clinic

SIR,—The excellent paper by Dr. F. M. R. Walshe on "Strategy and Tactics in Research" (April 17, p. 467) gives ample scope for thought on the future reorganization of medical research. I agree fully with most of his ideas, particularly with his emphasis on the importance of "true discoverers" and their schools of thought (e.g., Sherrington, Hopkins, and Lewis). Perhaps I may add to the discussion by referring briefly to the way research was conducted on the Continent, where a great deal of medical research was done in the clinics, and the contact with the theoretical institutes was very close.

As a rule the head of a university clinic, especially in the more important centres of medicine such as Berlin, Vienna, Munich, Heidelberg, etc., was a man of world reputation with an outstanding record of scientific research. His position was somewhat like that of the superintendent in a municipal hospital in London, but he had perfect liberty in the choice of his assistants, in his research, and in the use of his budget. In some places, as in Berlin, he was even free to choose the patients from the pool of the distribution centre for admission to the clinic, according to research and teaching requirements. There was always a great number of applicants and a waiting list for assistants in these clinics, and he could choose the most suitable. In order to secure a high standard of research work most clinicians made it a condition that their assistants, after their qualifying examination and their practical year, had had a theoretical training of at least 2 years as assistants in either an institute for biochemistry, physics, bacteriology, or physiology, or, in the case of surgeons, in anatomy or pathology.

After 4 years in the clinic the assistant became eligible as lecturer if his research work satisfied the faculty, and after another period of 4 years or more he could be appointed assistant professor (extraordinary professor) by the Ministry of Education on recommendation by his chief or other members of the faculty holding a chair. After that they were considered potential successors and heirs to the throne (chair). They either carried on the school of thought of their teacher or became themselves founders of a new tradition. Not much was thought of those who had not their particular "line of research," which was carried on over a long period. This tradition gave opportunities to follow up an idea over a long period, even through more than one generation. The younger men had the benefit of critical control by experienced research workers, who gave them technical advice and critical judgment, and as a rule had a sufficient knowledge of relevant literature and its value. The chief of the clinic had the ambition to be a benevolent godfather to his assistants' work.

The dual control by faculty and State did not abolish, but restricted, abuses such as favouritism for sons, in-laws, or members of influential feudal student clubs. Religious rather than racial prejudice played a part, in some Catholic States working against Protestants, and vice versa, in both cases against the members of the Jewish faith community. Paul Ehrlich, who remained a Jew, never became appointed to a chair. The physicist, Prof. Lenard in Heidelberg, a baptized Hungarian Jew, not only held the chair but became an honorary Aryan and author of a book on German physics under Nazi rule.

Industrialists were often far-sighted enough to support research without expecting quick returns, and contributed not only by money but also by placing their experience, assistants, or equipment at the disposal of a research worker. I mention the example of A. v. Weinberg (I.G. Farben), the close friend and supporter of Ehrlich.

Fate has placed me on the wrong side of the fence, and it may be that adverse experiences have influenced my views on essentials for successful research. They are: (1) Life-long or long-term appointments, grants, and facilities in departments (clinical and/or theoretical) of their own to be given to older and experienced research workers who have proved their ability by research achievements. They should have full freedom in the choice of their research, of their collaborators, and in the use of their budget. (2) Appointments or grants to be given to suitable younger research workers for periods of at least 3 to 5 years in order to enable them to perform a piece of work under the guidance of an experienced man of Group 1 in either clinics or theoretical institutes, or both. They could either assist in the work of their chief or do independent work under the guidance of his criticism and advice. (3) Chances of promotion from Group 2 to Group 1 for all suitable research workers. (4) Opportunities for research should be given to doctors and scientists according to ability and success *only*, and the choice should be independent of and not be influenced by prejudice and privilege.

Those who are in the position to make the choice should always realize that theirs is a responsibility not only to the nation but to mankind. There are still scientists who, like Archimedes, would rather have their head chopped off by an ignorant barbarian than abandon their thoughts and problems.—I am, etc.,

London, W.1. E. M. FRAENKEL.

Marching and Standing

SIR,—When long marches are such an important part of the training of the soldier, I think it worth while to publish the following marching tip. It was shown to me 50 years ago by a very good pedestrian, and I have used it on many a strenuous march in many parts of the world.

On the march, as soon as leg weariness is felt or, better, before this, and afterwards about every five miles, lie on the back and elevate the legs to nearly a right-angle with the body, resting the heels and only the heels against any available object. The legs must not be held up by muscular effort: keep them elevated for four minutes. It is best to time this with a watch. Time seems long under these circumstances and is apt to be cut short. There is no use in prolonging the time as the circulation has then re-established itself. The effect is quite remarkable. One's boots seem to have got a size larger and the toes can be moved freely inside the boot. On standing up all signs of leg-weariness have disappeared and the feet feel delightfully light and comfortable. Of course, this is only the way in which a limb is emptied of blood by the surgeon. It would seem that with the upright posture and prolonged walking the heart action and the drive of the leg muscles are not sufficient to maintain a thoroughly satisfactory circulation in the feet. The upright posture is a recent acquisition of *Homo sapiens*. I have never known anyone who was not surprised and delighted at the result of this procedure. I believe it is worth ten miles a day to anyone who adopts it. I think, too, that the relief of congestion has a great influence in preventing sore feet and blisters.

In Mesopotamia, where on desert marches there was nothing to rest the feet against, I evolved a drill. The men lay down in two rows, feet to feet, and then rested their heels against

those of their opposite numbers. I think that this is a measure which might find useful application in the case of shop-girls and all who have much standing to do. I believe it would result in much increased efficiency. Standing quite still and so depriving the leg muscles of their pumping action can be very painful. In old days in the Navy a man was, as a punishment, made to stand on a chalked circle.—I am, etc.,

Taynuilt, Argyll. P. F. CHAPMAN.

Artificial Respiration

SIR,—I cannot agree with two points in Dr. E. J. Thomson's letter (April 17, p. 490), in which he says that in artificial respiration (1) atmospheric pressure is the force we are dealing with, and (2) the problem is to get air out of the lungs, not in.

1. As we are immersed in the atmosphere it presses equally inside and outside the chest and can in practice be ignored, except, for example, in the "iron lung," in which some of the weight of the air is rhythmically taken off the outside of the chest, causing inspiration.

2. In Schäfer's method inspiration is actually the weak point (not expiration), because it relies on elastic recoil due to the muscle tone of the diaphragm. Tone progressively declines in drowning cases, and when it has quite gone (owing to death of the nerve cells) the lungs contract by their own elasticity and pull the flaccid diaphragm right up so that it becomes useless for artificial respiration by this method. Schäfer made the very natural assumption that when pressure was relaxed the thorax would return to its original volume and thus cause inspiration. This is correct in normal subjects but not, unfortunately, in bad drowning cases. That is one reason why our Naval doctors are now recommending my rocking method (which works by gravity and is independent of muscle tone) in preference to Schäfer's as soon as available. (See *First Aid in the Royal Navy*, just published at 2s. by H.M. Stationery Office.)

Dr. Thomson's other point is that the rocking method would not be available at low tide on shallow beaches such as the Solway. I believe a builder's two-wheel hand-cart (for carrying ladders, etc.) would serve this purpose and be readily transportable for organized bathing, though Schäfer must be kept up till it arrives. But Schäfer's method fails far too often.—I am, etc.,

Hull. FRANK C. EVE.

A Nutritious Diet-drink

SIR,—The warnings in your leader on minimum standards of feeding are most timely. It is of little value to state the "rations" that are authorized; the important point is to know the actual rations that are obtained. I would, however, draw attention to the still greater importance of utilizing as food all the rations that are actually received. Owing to the ignorance of English cooks and the convenience of "mass" cooking in canteens and institutions much food value is being wasted.

I have had the opportunity during the last 12 months of having charge of dysentery wards in several mental hospitals. I have found a considerable number of patients suffering from cellulitis of the legs and feet, swellings about the body, unnourished nails and teeth, and other pre-scorbutic symptoms; and this in spite of, on paper, a sufficient supply of root and green vegetables. Over-cooking and use of soda were the two greatest faults in the institution kitchens.

By the co-operation of wise medical superintendents and by the willing fellowship in service of the cookery supervisors I got a "tisane" made daily and issued as a ration in place of tea to all such patients. This preparation received the full vitamins A and C from the vegetables, and the result has proved the value of a diet ration always well known in all the South Continental hospitals. The "tisanes" were made from the vegetables available from day to day. They were chiefly from potatoes, carrots, turnips, cabbage, and some onions, leeks, and celery as and when available. By putting them through the fine mincing machine a valuable salad was also added, made from the hearts of savoys, brussels sprouts, raw carrots, raw turnips, with occasional watercress and onions and celery.—I am, etc.,

London, W.1. JOSIAH OLDFIELD.

Dr. Johnson's Asthma

SIR,—Sir Arthur Hurst's splendid paper on asthma (April 3, p. 403) has dispelled most of my doubts on this controversial subject. I do not think he is quite correct, however, in his reference to Sir John Floyer. He states that Floyer wrote a *Treatise on Asthma* in 1698 and that Dr. Johnson, who was his patient, relates how he "panted on" till his death at the age of 83, thirty-six years later. I doubt very much whether Johnson ever was a patient of Floyer's or even met him. I cannot find any evidence of it in the pages of Boswell; and besides, Johnson did not leave his native Lichfield to try his fortune in London until 1737, three years after Floyer died. At that time he had not emerged from the mists of obscurity, and his impecuniosity was such that the fees for a man of the standing of Floyer would have precluded him from seeking his advice.

The only mention of Floyer by Johnson is in two letters written in the last year of his life in 1784, when he was suffering from attacks of breathlessness which he attributed to asthma. It was natural that he should be interested in a man who was not only an authority on the subject but had suffered from the complaint himself. Here is an extract from the first letter: "My asthma is, I am afraid, constitutional and incurable; but it is only occasional, and, unless it be excited by labour or cold, gives me no molestation, nor does it lay very close siege to life; for Sir John Floyer, whom the physical race consider as an authour of one of the best books upon it, panted on to ninety, as was supposed; and why were we content with supposing a fact so interesting, of a man so conspicuous? because he corrupted, at perhaps seventy or eighty, the register, that he might pass for younger than he was. He was not much less than eighty when, to a man of rank who modestly asked his age, he answered, 'Go, look'; though he was in general a man of civility and elegance." There, in a few sentences, is an entertaining and illuminating pen-picture of Sir John by the great lexicographer himself.

The second extract is from a letter to his physician, Dr. Brocklesby: "I am now looking into Floyer, who lived with his asthma to almost his ninetieth year. His book, by want of order, is obscure; and his asthma, I think, not of the same kind with mine."

Dr. Johnson was quite right in surmising that he was not a true asthmatic. He was obviously suffering from myocardial insufficiency with progressive heart failure.—I am, etc.,

Leeds. R. G. MELVIN.

Houses to Live In

SIR,—So 10,000 flat-roofed farm-workers' cottages are to be built with concrete floors, walls, ceilings, and roofs! Any rural practitioner in the West Country knows how even good ordinary houses will "sweat" with our quick changes of humidity and how discouraging is the treatment of the rheumatic cottager living on a stone ground floor. For months in the year these dank rheumatism traps will not have a dry clout in them; a tent would be much healthier. And they are being sponsored by a Ministry of Health! Truly we are becoming nose-led by a city-minded bureaucracy.

The all "stone" method of construction can be made to give excellent results in North Africa or, centrally heated, in a dry drained town, but is totally unsuited to the coastal and moorland areas of Great Britain.—I am, etc.,

Newton Ferrers, S. Devon. W. F. BENSTED-SMITH.

Chairs of Child Health

SIR,—I observe in the issue of the *Journal* of April 17 a statement, in connexion with the inaugural lecture on "The Health of the Child" to be given in Newcastle by Prof. Spence as first holder of the Chair of Child Health in the University of Durham, that Durham is the first university in the kingdom to establish such a chair. The date of the institution of such chairs is of small moment so long as they *are* instituted, but I think it should be pointed out that a Chair of Child Life and Health has been in existence in this university since 1931.—I am, etc.,

SYDNEY SMITH,
Dean of the Faculty of Medicine,
University of Edinburgh.

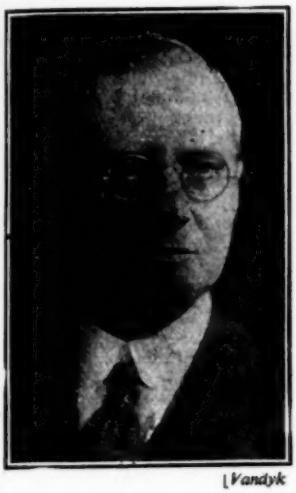
Obituary

WARRINGTON YORKE, M.D., F.R.S.

Professor of Tropical Medicine, University of Liverpool

Warrington Yorke, who died on April 24, was the son of the late Rev. H. Lefroy Yorke, and was born at Lancaster in 1883. He attended University School, Southport, and Epworth College, Rhyl, and studied medicine at the University of Liverpool in the time of Sherrington, Paul, and Rubert Boyce. He obtained the degrees of M.B., Ch.B. in 1905, followed by that of M.D. in 1907; in 1929 he became M.R.C.P., followed by the Fellowship in 1934.

Very early in his medical career he joined the School of Tropical Medicine because the study of diseases of the Tropics attracted him. In 1907 he went to Nyasaland on a two-years commission to study blackwater fever. He was appointed Director of the Runcorn Research Laboratory of the Liverpool School in 1909. During 1911-12 he was in Northern Rhodesia on the British South Africa Company's Sleeping Sickness Commission, and soon after the commencement of the last war in 1914 he was in Sierra Leone investigating sleeping sickness. He was appointed Walter Myers Professor of Parasitology in 1914 and he held this post until 1929, when he was made Alfred Jones Professor of Tropical Medicine. During the period 1920-9 he acted as honorary assistant physician and then was appointed honorary physician for tropical diseases in the Liverpool Royal Infirmary. From 1937 he served as examiner in tropical medicine and hygiene to the Conjoint Board in London.



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Besides taking part in and leading several scientific expeditions to the Tropics, Yorke was commissioned to travel widely in connexion with projects designed to disseminate knowledge of medical progress in tropical countries. Thus he went to Antwerp to supervise the tropical health exhibit at the International Colonial and Maritime Exhibition; to Buenos Aires for the British Empire Trade Exhibition; to Dresden for the International Hygiene Exhibition. In 1939, and again in 1942, he went to the United States of America, the latter journey being undertaken on behalf of the Medical Research Council and the Ministry of Supply. During the latter part of his career he was especially interested in the advance of chemotherapy, and to this branch of research he made numerous scientific contributions of an original character and of a high order. He was a member of the Tropical Research Committee of the Medical Research Council, and also of the Chemotherapeutic Research Committee of Imperial Chemical Industries. Over and above this great range of work he found time to engage in many other activities. He was chairman of two public schools—Penrhos College and Birkenhead School—and was also chairman of Greenings and Sons Limited and two affiliated companies, and on the board of the West African Drug Company.

Warrington Yorke's outstanding work in tropical medicine earned him wide recognition abroad, and he was a member of numerous foreign scientific bodies. His reputation was recognized by invitations to address many foreign societies, and the engagements which he fulfilled in Germany, Italy, and America represent only the few which he found it possible to accept. In 1925 the Chalmers Memorial Gold Medal of the Royal Society of Tropical Medicine and Hygiene was conferred on him for his conspicuous services to the cause of tropical medicine, and in the year 1932 he was elected a Fellow of the Royal Society, which appointed him Croonian Lecturer this year.

The Alfred Jones Professorship of Tropical Medicine which Yorke held is of historic interest in the annals of the Liverpool School. The chair was established in 1902 and the first occupant was Ronald Ross, who held it until 1913. His successor was J. W. W. Stephens, and he, in 1929, was succeeded by Yorke, who occupied the chair until the time of his death. The duties of the Professor of Tropical Medicine have become almost yearly more onerous as a result of the progress of research and the extension of the ground to be covered. It was fortunate indeed that Yorke's early training and wide experience qualified him admirably not only to fulfil the duties of this chair with great distinction but also to add very greatly by his own original research to our fuller understanding of many important tropical diseases. At the Annual Meeting of the British Medical Association in 1934 he was president of the Section of Tropical Diseases.

In the last war Yorke served in the R.A.M.C. and was stationed in Malta; during this war he was engaged, up to within a short time of his death, in conducting courses for Service medical officers going abroad to tropical countries. He married in 1916 Elizabeth Annie Greening, and they had two children. He is survived by his wife, one son, now unfortunately a prisoner in Japanese hands, and one daughter.

D. B. BLACKLOCK.

Sir PHILIP MANSON-BAHR writes:

Warrington Yorke stood for accuracy and truth. What he wanted were facts and proofs, and it must be admitted that he generally provided both. In manner he was direct, alert, questioning, and vivacious. It therefore followed that he abhorred shams and shibboleths. He preserved a sane, analytical, and healthy attitude to medical research in general and to tropical medicine in particular. It is therefore not too much to claim that to Continental workers he typified the spirit of British research, and his reputation thereby became world-wide. In tropical literature his critical reviews were a joy to read and digest, and in every case they constituted a real lasting contribution. In teaching he was clear, didactic, practical, and instructive; in research original, inventive, resolute. He went straight for his objective and never hesitated or swerved in his course till results had been obtained. In tropical medicine Yorke typified an epoch, and his loss will be mourned not only by the School of Tropical Medicine of which he was the fountain-head and moving spirit, but also by scientific circles all the world over.

We regret to announce the death at Fareham of Surgeon Captain JAMES CAMPBELL BRINGAN, R.N. (ret.), who had long specialized in eye diseases, first while serving in the Navy and afterwards in civil life at Portsmouth. He studied medicine at Glasgow University, graduating M.B., Ch.B. with honours in surgery in 1902. During the last war he was appointed a Chevalier of the Order of the Redeemer of Greece, a Chevalier of the Crown of Italy, and received the silver medal of the Italian Red Cross. Before his retirement from the Navy he had been ophthalmic surgeon to the R.N. Hospitals at Malta and at Haslar, and to the R.N. Depot, Bournemouth. He became ophthalmic surgeon to the Portsmouth Eye and Ear Hospital and to St. Mary's Hospital, Bournemouth, and was a member of the Ophthalmological Society of the United Kingdom. He was elected chairman of the Portsmouth Division of the B.M.A. three years ago.

We regret to announce the death on April 6 of Dr. HAROLD SNAPE, late of Pendleton, Lancs. He was born in Manchester on Aug. 16, 1875, son of Alderman Joseph Snape, J.P., and from Manchester Grammar School went to Owens College, graduating M.B., Ch.B. of the Victoria University with first-class honours in 1899. In the last war he served, with the rank of captain, R.A.M.C., as anaesthetist to the 2nd Western General Hospital, Salford; after demobilization he became examining medical officer under the Ministry of Pensions and held a number of posts as medical referee to assurance companies. During his years of active practice Dr. Snape had been anaesthetist to the Manchester Children's Hospital, honorary physician to the Pendleton Dispensary Branch of the Salford Royal Hospital, and visiting surgeon to the Southport Infirmary. He was an officer of the Order of the Hospital of St. John of Jerusalem and an honorary life member of the St. John Ambulance Association. He joined the B.M.A. in 1901 and contributed several papers on anaesthesia to these columns.

We regret to announce the death in April by enemy action of Dr. ARTHUR ARBUTHNOT STRATON of Newport, Isle of Wight, who was honorary surgeon to the Royal Isle of Wight County Hospital at Ryde and consulting surgeon to H.M. Prison,

Parkhurst. Dr. Straton studied medicine at St. Mary's Hospital, graduating M.B., B.S.Lond. in 1907 and winning the gold medal at the M.D. examination in 1913. He also took the F.R.C.S.Ed. diploma. Before settling in private practice he had been resident surgical officer at the Wolverhampton General Hospital, senior house-surgeon at the Royal Sussex County Hospital, Brighton, and resident obstetrical officer at St. Mary's. During the last war he served as temporary captain, R.A.M.C. He had been a member of the B.M.A. since 1911. A warm tribute has been paid in the local press to Dr. Straton's devotion to duty, his kindness and generosity, his robust common sense and ripe wisdom. A former colleague writes: During the years that I lived in the Isle of Wight Dr. Straton was my near neighbour and an intimate friend, and I had a high opinion of him as a family doctor. He will be sorely missed, for he was in the forefront of his profession both as a physician and a surgeon.

We regret to announce the death on April 17 of Dr. HENRY BUIST, one of the best-known medical practitioners in Dundee. He had been a member of the B.M.A. for 40 years, was president of the Dundee Branch in 1926–7, and had also served as president of the Forfarshire Medical Association. Dr. Buist was a native of Dundee, and before taking up the study of medicine at Edinburgh was for some little time a schoolmaster. He graduated M.B., Ch.B. in 1901 and proceeded M.D. in 1928; he was an honorary life member of the St. Andrew Ambulance Association and a J.P. for the city of Dundee.

The death is announced of Prof. PAUL BÉGOUIN, formerly professor of surgery at Bordeaux University and president of the French Surgical Congress in 1927. Most of his publications deal with gynaecology.

The Services

Surg. Cmdr. R. L. Stubbs, R.N.V.R., has been awarded the R.N.V.R. Officers' Decoration.

Temp. Surg. Lieut. C. B. Holland, R.N.V.R., has been awarded the D.S.C., and Temp. Surg. Lieut. J. L. B. MacFarlane, R.N.V.R., has been mentioned in dispatches (posthumously) for bravery in Northern Waters.

Capt. (Temp. Major) T. R. Wilson, R.A.M.C., has been awarded the M.C. in recognition of gallant and distinguished services in North Africa.

Capt. E. T. Gilbert, R.A.M.C., has been appointed O.B.E. (Military Division) in recognition of gallant and distinguished services in the field.

A *Supplement* to the *London Gazette* dated April 20 announces the award of the Albert Medal in Gold to Temp. Surg. Lieut. M. J. Clow, R.N.V.R., for gallantry in saving life at sea. The announcement reads as follows: "Surg. Lieut. Clow was between decks when H.M.S. *Ibis* was hit and badly damaged. Wounded men were brought to him in the sick bay, among them an engine-room artificer badly burnt about the arm. Surg. Lieut. Clow gave him an injection of morphine, and, as the ship was now sinking, helped the man up the ladder and out on to the upper deck. As the man had no life-belt he put his own on him. Then he got him into the water, and made sure he was free of the ship before he himself abandoned it. In doing this Surg. Lieut. Clow became entangled in the rigging and was taken down some way before he got clear. He then swam for three hours without a life-belt before he was picked up."

The *London Gazette* announces the posthumous award of the Albert Medal to William Chisholm, M.B., ship surgeon. The announcement reads as follows: "The ship in which Mr. Chisholm was serving was torpedoed in darkness and immediately began to sink. A fire broke out, which enveloped the bridge in flames, and orders were given to abandon the vessel. She sank within eight minutes. One of the senior officers, who was on the bridge, was badly injured. He was taken to the surgery, where Mr. Chisholm immediately attended to him, and afterwards, as he was helpless, helped him to the deck in order to get him away from the sinking ship. Mr. Chisholm's efforts, however, were unsuccessful and neither he nor the officer was seen again. Although the ship was sinking rapidly, Mr. Chisholm remained and deliberately sacrificed his chance of safety in a gallant attempt to save the life of another."

CASUALTIES IN THE MEDICAL SERVICES

Previously reported Prisoner of War, now reported Wounded and Prisoner of War.—War Subs. Capt. W. E. G. Bradford, R.A.M.C., Capt. A. E. Brewer, R.A.M.C., War Subs. Capt. J. K. Drucquer, R.A.M.C.

Universities and Colleges

UNIVERSITY OF OXFORD

Radcliffe Scholarship in Pharmacology, 1943.—This is awarded by the Master and Fellows of University College on the nomination of the Professor of Pharmacology. Candidates must have taken the pharmacology course in Oxford and have passed the examination in pharmacology and principles of therapeutics either in December, 1942, or June, 1943. A special examination in pharmacology for the scholarship will be held in the Department of Pharmacology on Tuesday, July 6, at 10 a.m. Candidates should be prepared to answer questions on pharmacological methods and biological standardization. They may be examined orally as well as by written paper. Those wishing to enter for the examination should send their names to the Department by 12 noon on July 5.

UNIVERSITY OF LONDON

The official *University of London Gazette* reports that regulations for the M.D. and M.S. examinations have been amended by the addition of the following after the reference to the essay: "The essay must be satisfactory as regards literary presentation as well as in other respects." During the war an additional M.B., B.S. examination will be held early in February, which means the holding of this examination three times a year—namely, February, April, and October.

The Senate has appointed a special committee to report on the question of providing further facilities for the medical education of women in London, and on the procedure to be adopted for the provision of such additional facilities.

Mr. George H. Macnab, M.B., F.R.C.S., has been appointed Dean of Westminster Medical School in succession to Sir Adolphe Abrahams, who has retired.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examination indicated:

THIRD M.B., CH.B.—*Pathology and Bacteriology:* S. S. Epstein, G. V. Feldman, Margaret Hedley, Marion B. T. McIntosh, T. M. Martin, Nancy B. Penney, J. A. Shrigley.

Medical Notes in Parliament

Medical Inspection by Women Doctors

Mr. BELLENGER on April 20 condemned the routine medical examination of men in the Army by women medical officers. Dr. MORGAN said the woman medical officer had her duty to do and did it. She had no emotional reaction. About 2% of males and females did not like medical examination by people of the opposite sex.

Mr. ARTHUR HENDERSON said the nation owed gratitude to the women doctors, who to-day rendered most important service. The Army now had a large number of mixed regiments of anti-aircraft artillery, and required women doctors to cater for the needs of women serving in them. The problem did not exist in the Navy or in the R.A.F. These routine medical inspections were designed mainly to detect cases of skin disease or infestation, and had been carried out as a routine on all personnel returned from or proceeding on leave and when men were transferred from one unit to another in the United Kingdom. In future such inspections would be made only when the medical officer in charge of troops or the senior administrative medical officer considered them necessary. They were only required when cases were suspected in a unit and the sufferers were not reporting sick. The inspections had hitherto been known as "F.F.I."—free from infection. In future they were to be called "health inspections," and soldiers and auxiliaries would have the right to be examined by medical officers of their own sex. If this was not immediately possible the full examination would be postponed. In the interim a partial examination would be made at which men would be stripped to the waist and women would wear the equivalent of a bathing costume. At all inspections a third person of the same sex would be present. It was proposed to introduce, so far as possible, the atmosphere of the clinic rather than that of a parade.

Nurses in Scotland

Mr. WATT asked on April 20 whether a Nurses Bill would be introduced for Scotland. Mr. JOHNSTON replied that the Scots committee, presided over by Lord Alness, took views on some aspects of the problem of State recognition of assistant nurses

which were divergent from those adopted in England by the Athlone Committee. He was endeavouring to see how far it was possible to bridge the differences before formulating a Bill for Scotland.

Answering Mrs. Hardie on the same date Mr. JOHNSTON said the Scottish Nurses' Salaries Committee had made recommendations regarding the salaries of nurses employed in general hospitals other than approved training schools, and in fever, sick children's, and tuberculosis hospitals, and on the conditions of nursing employment generally. All matters remitted to the committee had been covered with the exception of superannuation and questions relating to assistant nurses and nurses employed in public assistance institutions and mental hospitals. The report was presented to Parliament and copies were available. Mr. Johnston added that he was communicating with local authorities and voluntary hospitals commending the recommendation for adoption.

Fitness Centre at Gleneagles

Mr. JOHNSTON stated on April 20 that after consultation with the Minister of Fuel and Power he had appointed a consultative committee, under the chairmanship of Sir Robert Bruce, consisting of five members nominated by the miners' organizations, five nominated by the mine-owners' associations, one from the Ministry of Fuel and Power, and one from the Ministry of Labour and National Service: (*a*) to assist in ensuring that the benefits of the fitness centre at Gleneagles Hospital were recognized throughout the mining industry in Scotland, and that the fullest advantage was taken of them; (*b*) to assist in the re-employment of patients treated at the centre; and (*c*) to advise on non-medical matters affecting the welfare of patients treated at the centre.

Food Inspection

Mr. ERNEST BROWN, replying on April 20 to Sir William Jenkins, said a communication was sent to local authorities in the course of last year impressing upon them the need for taking all practicable steps to secure the due discharge of the duties of inspection imposed upon them by the Food and Drugs Act, 1938, especially in relation to cleanliness in production, treatment, and distribution of milk. This service was subject to the exigencies of the man-power situation, but arrangements had been made by which sanitary inspectors would not be recruited for military service except in special cases in which their professional qualifications were required in the armed Forces.

Minister of Health on Local Authorities

Mr. ERNEST BROWN addressed the Conservative M.P.s' Social Services Committee at the House of Commons on April 20. He said there was no increase in infectious disease; his Department was collecting information about the results of Regulation 33B on the incidence of venereal disease. The Government recognized the association of environmental conditions with the state of public health, and housing proposals were in preparation. Mr. Brown said he was consulting all interests concerned on the future of the health services. Health and medical services must continue to be worked through local authorities, but adjustments were required. Local authorities hated regional control, and it would be necessary, pending local government reform, to deal with the existing major local authorities, with adaptations. He wished to give as great a scope as possible to the smaller local authorities, who were responsible now for infectious diseases hospitals and were keen on their maternity and child welfare duties. Parliament should build on these. In hospitals there must be regional grouping. He hoped to issue a White Paper on the future of the hospitals. Mr. Brown added an assurance that he was determined to maintain the voluntary hospitals and the right of private medical practice.

Compensation for Practices

Mr. MCENTEE inquired on April 22 whether, in the reorganization of the National Medical Service, it was proposed to compensate doctors for capital invested in purchasing practices and premises used for professional purposes. Mr. BROWN said compensation for loss of value of practices would certainly be one of the subjects with which his proposals would deal.

Financial Help for Tuberculous Persons

Mr. PRITT inquired on April 22 whether the attention of Mr. Brown had been called to an article by Sir Wilson Jameson in *Current Affairs*, No. 37, of Feb. 13, 1943, entitled "National Health"; what special financial help was now being given to sufferers from tuberculosis to meet cases where treatment was put off or stopped for financial reasons; and how much had already been paid out under this head to the latest date for which figures were available. Mr. BROWN said he had seen this article. It had reference to arrangements which were in preparation at the time of its writing. These were not yet in actual operation, but the details had been worked out in consultation with medical experts and representatives of local authorities. A circular and memoranda containing detailed guidance for the local authorities by whom the allowances were to be administered would be issued shortly.

Medical and Ancillary Man-power

On April 22 Sir ROBERT GOWER asked the present number available, respectively, in Great Britain of qualified doctors, pharmacists, opticians, nurses, and other persons concerned in the provision of services or equipment connected with the health of the people. Mr. BROWN gave the following approximate figures:

Registered medical practitioners (excluding N. Ireland) in civil practice or in the Forces	49,100
State-registered nurses (on Register for England and Wales)	99,590
Qualified pharmacists (excluding N. Ireland)	25,150
Opticians (ophthalmic and dispensing, excluding N. Ireland)	6,270

"Relieving the G.P."

Sir ROBERT GOWER asked Mr. Brown on April 22 whether, to make the maximum effective use of the services of available doctors in implementing the Beveridge report, he would institute an investigation into the extent to which doctors could be relieved of routine work by pharmacists in relation to dispensing and carrying out various tests, by qualified opticians in relation to sight-testing, and by increased numbers of qualified nurses both for visiting patients and for assisting in surgery work. Mr. BROWN answered that he intended to consider possibilities of relief of this kind at the appropriate stage of the preparation of his proposals.

Pensions Appeal Tribunals

Sir WALTER WOMERSLEY announced on April 22 that the Government had decided that arrangements should now proceed for setting up independent tribunals to hear appeals from all classes of claimants whose title to compensation was rejected under any one of the various war pension schemes administered by the Ministry of Pensions. Each tribunal would include a legal chairman, a doctor, and a member of the service or class covered by the scheme under which the claim was made. It was the intention to establish 9 tribunals to begin with. These would sit at various centres for the convenience of appellants. Their number would be increased as found practicable, but owing to the difficulty which still existed in obtaining the full personnel required the increase could only be gradual. Legislation would be introduced as soon as possible after the House resumed its sittings. Active steps were being taken to complete preparations for the tribunals to begin their work with the least possible delay.

Nurses Bill

On April 20 the House of Lords took the Committee stage of the Nurses Bill. Lord HORDER moved to insert a new clause to provide that any person should be liable to summary conviction if, knowing that some other person was not registered or enrolled, he made any statement or did any act calculated to suggest the contrary. Lord Horder said that as the Bill stood it was not an offence for a third person, not the nurse herself or an agency, to represent a woman falsely as having qualifications. Lord SNELL accepted the amendment and the Committee stage concluded.

The Nurses Bill was reported in the House of Lords on April 21 without further amendment and was read a third time. Lord KEYES and Lord CHATFIELD repeated the request that naval pensioners with long experience in naval hospitals and in sick-bays of ships should be entitled to the designation of State-registered nurses. Lord Keyes understood that under the Bill these men would be classed as assistant nurses. Lord SNELL said these remarks would be conveyed to the Minister of Health.

On April 22 the Nurses Act received the Royal Assent.

Ministry of Health Report.—Mr. Ernest Brown hopes to publish in three months a summary report on the work of the Ministry of Health.

Notes in Brief

Mr. Ernest Brown states that the Crown has not undertaken to bear the responsibility for costs and damages in the event of a claim being made against a special practitioner giving compulsory treatment under Regulation 33B.

The Minister of Health is advised that it has not been possible to establish the causes of outbreaks of epidemic catarrhal jaundice in this and other countries. A special study of this disease is being made under the auspices of the Medical Research Council.

Sir James Grigg told Mr. Bellenger on April 6 that a soldier might be compelled to be medically examined whether the examination was carried out by a male or a female doctor. He emphasized that he answered a question on the legality and not on the expediency of such examination.

No. 15

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 17.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1943					1942 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	103	9	29	2	7	158	17	48	4	8
Deaths		1	4				—	4		1
Diphtheria	723	34	187	100	24	786	37	216	44	28
Deaths	16	2	4	2	—	16	—	2	—	1
Dysentery	107	13	45	—	1	208	12	40	—	—
Deaths		1		—	—				—	—
Encephalitis lethargica, acute	2	1	1	—	—	5	—	—	—	—
Deaths		—								
Erysipelas			58	12	1			48	9	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				36		4	41		25	
Deaths	49	5	6	9	4	44	7	12	15	1
Measles	16,732	1,041	687	7	90	4,087	388	452	146	57
Deaths	12	1	1	—	2	3	1	1	3	
Ophthalmia neonatorum	91	4	20	—	—	108	4	19	2	—
Deaths										
Paratyphoid fever	3	—	2			8	1	—		
Deaths	1	—	—		—	1	—	—		
Pneumonia, influenzal*	1,139	70	7	13	11	1,089	58	9	5	—
Deaths (from influenza)	43	1	4	1	2	36	4	—	1	1
Pneumonia, primary			250	39				341	27	
Deaths				11	14			—	12	14
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	5	—	—	1	—	3	—	2	—	1
Deaths		—					—			
Puerperal fever†		5	12	3	—		2	10	1	—
Deaths		—					—			
Puerperal pyrexia	159	7	17		1	162	10	20		1
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,058	173	260	39	53	1,027	60	176	58	27
Deaths	2	1	—	—	—	2	—	1	—	—
Small-pox	—	—	—		—	—	—	—	—	—
Deaths	—	—		—	—	—	—	—	—	—
Typhoid fever‡	11	2	2	8	1	11	1	4	7	—
Deaths	1	—	1	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—			—	—	—			—	—
Whooping-cough	1,944	137	277	40	35	1,555	229	47	36	9
Deaths	13	2	5	3	1	16	3	—	—	
Deaths (0–1 year)	388	54	65	51	31	343	31	67	46	27
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,707	682	657	233	156	4,615	577	635	214	159
Annual death rate (per 1,000 persons living)			14·8	15·3	§			14·3	16·3	§
Live births	6,550	764	1019	401	309	6,266	640	944	343	289
Annual rate per 1,000 persons living			20·8	26·4	§			19·5	22·9	§
Stillbirths	236	27	39			232	18	43		
Rate per 1,000 total births (including stillborn)			37					44		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Puerperal fever is included with pyrexia, except in London (administrative county),

‡ Includes paratyphoid A and B for Northern Ireland.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week scarlet fever notifications rose by 65, while those of measles and acute pneumonia fell by 1,324 and 151 respectively. The decline in scarlet fever occurred in the South, especially in London, 36. Small rises, the greatest being Lancashire 31, occurred elsewhere.

Notifications of acute pneumonia fell in Durham by 41, Lancashire 34, and Essex 32, but only small fluctuations were reported in other counties.

There were 10 fewer cases of whooping-cough than in the preceding week. The largest variations were rises in Yorks West Riding 26 and Middlesex 23, and a drop of 31 in London.

The incidence of measles fell mainly in Derbyshire by 289, Yorks West Riding 272, Gloucestershire 217, Devonshire 181, Durham 122, Essex 129. The counties reporting the largest rises were Suffolk by 155, Staffordshire 148, Worcestershire 96, Bedfordshire 87.

No further cases of dysentery were reported from Cheltenham M.B., where there was a large outbreak in the preceding week, but 9 cases were reported in Bristol C.B. 7 and Thornbury R.D. 2. The highest totals were Essex 18 (Ilford M.B. 13), and Yorks West Riding 20 (Dewsbury C.B. 19).

In *Scotland* there was an increase of 16 in the incidence of dysentery and a drop of 105 for measles. Cases of dysentery were reported from twelve areas, the largest centre of infection being that of the city of Aberdeen, 8 cases. The fall in the incidence of measles did not extend to the western area, where 527 cases were recorded, compared with 523 in the preceding week. The largest declines were those of the cities of Dundee 59 and Edinburgh 40.

In *Eire* the rise in the notifications of diphtheria was due to the experience of Dublin, where 40 cases were recorded.

In *Northern Ireland* there were 227 fewer notifications of measles. Only one case was reported in Lisnaskea R.D., compared with 207 in the previous week.

The Week Ending April 24

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,770, whooping-cough 1,827, diphtheria 710, measles 13,490, acute pneumonia 866, cerebrospinal fever 83, dysentery 69, paratyphoid 5, typhoid 3.

Medical News

The Harveian lecture will be given by Sir Thomas Dunhill on "Short Oesophagus with Thoracic Loculus of the Stomach" at 11, Chandos Street, at 4.30 p.m. on Monday, May 17.

Two Cantor lectures on "Some New Properties of Inorganic Dusts" will be given by Prof. H. V. A. Briscoe, D.Sc., before the Royal Society of Arts, John Adam Street, Adelphi, W.C., on May 17 and 24, at 1.45 p.m.

Prof. G. Grey Turner will deliver the George Haliburton Hume memorial lectures in Newcastle-upon-Tyne at the meetings of the Newcastle and Northern Counties Medical Society on May 20 and 27, at 4.30 p.m., at the Royal Victoria Infirmary. His subject is "The Management of Injuries and Diseases of the Oesophagus."

A meeting of the Faculty of Radiologists will be held at the R.S.M., 1, Wimpole Street, W., on Saturday, May 22, at 11 a.m., when Prof. B. W. Windeyer will deliver the Skinner lecture on "Malignant Tumours of the Upper Jaw." The lecture is open to all members of the medical profession.

At a meeting of the Illuminating Engineering Society on Tuesday, May 11, in the Hall of the Institution of Mechanical Engineers (Storey's Gate, St. James's Park, S.W.) an address will be given at 5 p.m. on "Light and Vision" by Sir John H. Parsons, F.R.S., F.R.C.S. Tickets of admission may be had from the Illuminating Engineering Society, 32, Victoria Street, S.W.1.

The Socialist Medical Association is holding a health workers' convention on Sunday, May 16, at 5 p.m., in the Large Conway Hall, Red Lion Square, W.C., under the chairmanship of Mr. Somerville Hastings, F.R.C.S. The speakers will include Dr. H. Joules, Dr. D. Stark Murray, and Dr. Edith Summerskill, M.P.

A conference on wartime nurseries will be held on May 15 at 3 p.m. at B.M.A. House, Tavistock Square, W.C., under the auspices of the National Society of Children's Nurseries, the Nursery Schools Association of Great Britain, and the London Women's Parliament. The main part of the conference will be open for discussion. Applications for tickets should be sent to the Conference Secretary, London Women's Parliament, 24, High Holborn, W.C.1.

The Nutrition Society has arranged a whole-day conference on nutrition in infancy to be held on Saturday, May 22, at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1, beginning at 10.30 a.m., with Prof. L. G. Parsons in the chair. The following papers will be read: (1) "Nutritional Needs in Infancy," by Dr. H. M. M. Mackay; (2) "Recognition of Nutritional Disorders in Infancy," by Wing Commander R. W. B. Ellis; (3) "Treatment of Nutritional Disorders in Infancy," by Dr. A. A. Moncrieff; (4) "Public Health Aspects," by Dr. J. C. Spence and Dr. H. E. Magee. The discussions after the four papers will be opened by Prof. Noah Morris, Dr. S. G. Graham, Dr. J. V. C. Braithwaite, and Mr. F. Le Gros Clark, respectively. Further details of the Nutrition Society can be obtained from the Hon. Secretary, Dr. Leslie Harris, Nutritional Laboratory, Milton Road, Cambridge.

An extraordinary meeting of the Association of Surgeons of Great Britain and Ireland will be held in London on Thursday, July 22, at the Royal College of Surgeons of England, when the following subjects will be discussed: "The Treatment of Burns in the Field and in Hospital," and "The Use and Abuse of Sulphonamide in War." This meeting will be preceded on July 21 by a reception given by the President and Council of the Royal College of Surgeons. The secretaries for the meeting are E. C. Hughes and Philip H. Mitchiner, who will issue full details to Fellows in due course.

The Lord President of the Council has appointed Charles S. Hanes, Ph.D., F.R.S., to be Director of Food Investigation in the Department of Scientific and Industrial Research. Dr. Hanes is at present serving with the Food Mission in North America.

The National Association for the Prevention of Tuberculosis announced on April 6 that, owing to the difficulty in obtaining nursing and domestic staff, the Colony for Boys at Burrow Hill, Frimley, Surrey, will have to be closed in three months' time. This colony has some 80 beds for the treatment and training of tuberculous youths.

A new and limited issue of the *British Pharmacopoeia*, 1932, which has been out of print for some time owing to destruction of copies by enemy action, is now on sale. Copies (21s., or 21s. 9d. including postage) may be obtained from Constable and Co. Ltd., 10, Orange Street, London, W.C.2. Also available are the First Addendum (1936) 5s.; Second Addendum (1940) 2s.; Third Addendum (January, 1941) 3s. 6d.; Fourth Addendum (October, 1941) 5s.; and the Fifth Addendum (1942) 5s.

The issue of the *Schweizerische medizinische Wochenschrift* for Feb. 13 is dedicated to Prof. Ernst Anderes, professor of gynaecology and obstetrics at Zurich University, on the occasion of his 60th birthday.

The British Records Association has issued a memorandum, under the title *Modern Records: What Can We Safely Destroy?* which should be of great assistance to those who wish to answer the national call for paper and to clear valuable office space, but are desirous not to destroy documents which may be of historical value. After a brief discussion of general principles, it gives schedules of documents which it is desirable to preserve, and of those which may generally be destroyed. Copies can be had free on application to the honorary secretaries, British Records Association, c/o Public Record Office, Chancery Lane, W.C.2.

The Henry George Plimmer Fellowship is tenable at a recognized institution at home or abroad, but the Fellow will be considered to be attached to one of the Biological Departments of the Imperial College of Science and Technology, South Kensington, S.W.7, and will work under the general supervision of a professor of that department. The subject of research may include morbid anatomy, histological anatomy, chemical pathology, protozoology, bacteriology and allied subjects in either zoology, medicine, or botany. Applications for this Fellowship must be made to the Rector of the College by June 1.

The sanatorium at Nayland, near Colchester, is being taken over by the Council of Management of Preston Hall, who will provide treatment and occupational therapy and industrial training there for women suffering from tuberculosis, especially those discharged from the Services, on the same lines as at Preston Hall and at Douglas House (Bournemouth). The institution, which will be known as Nayland Hall, came under the direction of the British Legion on May 1, and is to be administered from Preston Hall by Dr. J. B. McDougall.

A national drying plant for the preparation of dried plasma has been established in Edinburgh. In spite of the call-up of men and women the number of blood donors in Scotland continues to increase; in Glasgow alone there are 6,000. Dumfries now has a subsidiary blood bank.

The Alnwick Rural District Council has placed on record its appreciation of the faithful services of Dr. A. Scott Purves as its medical officer of health during the past 50 years. He was reappointed for the duration of the war.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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ANY QUESTIONS?

The Barrel Bandage

Q.—*What is the barrel bandage and how is it applied to compound fractures of the jaw?*

A.—The barrel bandage for fractures of the jaw was described in an article by Mr. W. Kelsey Fry in the *Journal* of Dec. 2, 1939 (p. 1086). Mr. Fry pointed out that the four-tail bandage was no longer used by those surgeons familiar with the treatment of fracture of the mandible. For the barrel bandage about six feet of 2-in. to 2½-in. bandage, preferably unbleached calico, is required. The middle of the bandage is placed under the jaw, well back just in front

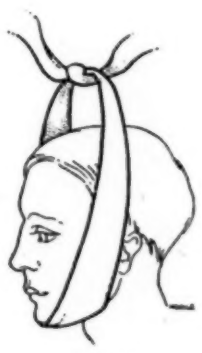

FIG. 1

FIG. 2

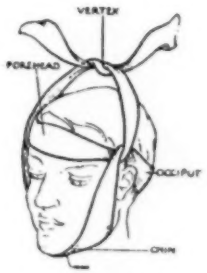

FIG. 3

FIG. 4

of the angle; then a simple knot is tied over the vertex of the skull (Fig. 1). Using both hands, open the knot so that the front loop comes in front of the forehead and the back portion under the occiput (Fig. 2). The two ends are then taken and upward tension is exerted, and by a slight adjustment the two running hitches are made to occupy a position slightly above and in front of the ear. The two ends are then tied in a reef knot on the top of the head (Figs. 3 and 4).

Duration of Diphtheria Prophylaxis

Q.—*What is the approximate duration of the protection given by alum-precipitated toxoid injections against diphtheria, and what is the optimum period that should elapse between the two injections? Is the protection less complete when the second injection is given*

with only a two-week interval instead of four? I am often asked by parents how long the protection lasts and how I know whether it is successful.

A.—(*a*) Such a question unfortunately cannot be answered dogmatically. "Protection" depends on the virulence of the strain of diphtheria attacking the child, and probably the dose implanted. The Ministry of Health memorandum of January, 1940,[1] stated that the immunity following artificial immunization "persists for years and perhaps for life." This is a shade too optimistic. If we measure the antitoxin in the blood of immunized children the average drops somewhat each year, and most immunologists urge a reinforcing dose of prophylactic on entry into school—i.e., from 3 to 5 years after immunization in early childhood.

(*b*) Broadly, the longer the interval between the two injections of A.P.T. the better the subsequent immunity—six months would be better than one month and four weeks better than two weeks. But we cannot risk the low immunity for six months, and a month is a reasonable compromise. Parents easily remember the date, and the system works. If T.A.F. be chosen, probably the optimum dosage would be three doses of 1 c.cm. at 4 weeks' interval.

(*c*) We could ascertain that the immunization is successful by Schick-testing every child, or a representative sample of the children. With a good A.P.T., an interval of four weeks, and a dosage of 0.2 and 0.5 c.cm. as recommended by the Ministry of Health, the conversion of Schick-positive to negative has been usually found to occur in from 90 to 100% of children—most recent figures being much nearer the 100% level.

Ring Pessaries

Q.—*In these days of rubber shortage, and from the fact that my suppliers have replied to my order for ring pessaries—"None available"—and since it is not always feasible or advisable to recommend operation for patients requiring such pessaries, is there anything else one may use in conservative treatment for such cases?*

A.—Ring pessaries are of rubber, and rubber is not to be had. Some surgical firms can no longer supply the common types of pessary. But ring pessaries may also be of the rigid type. Previously these were of vulcanite, but now the modern plastics are pressed into use, and bright, semi-transparent "rings" are making their appearance. The rigid ring pessary has always had its advocates. It is lighter, cleaner, and does not readily provoke a vaginal discharge. On the other hand it is not so easily introduced, and thus a smaller size must be used than would be possible in the case of the compressible rubber ring. If not superior, the rigid pessary is a good substitute and worthy of trial.

INCOME TAX

Purchase of Practice

W. B. asks what allowance would be permitted if he were to "buy a practice on easy terms—i.e., out of the actual income received."

*** Periodical payments of the kind indicated usually are made up of two distinct elements: (*a*) repayment of money advanced or left on loan, and (*b*) interest on the amount still outstanding. No allowance can be made as regards (*a*)—essentially such payments are "savings" of capital—but an allowance for the interest can be made if the advance is from a bank. (In the case of interest paid to private persons the borrower can recoup himself by deducting tax from the payments as they are made.)

LETTERS, NOTES, ETC.

A New Syndrome?

DR. C. E. H. MILNER writes: I wonder if other readers have shared my recent experience in being called upon to treat cases of the type I will describe. I am at present attending four middle-aged women suffering from identical minor, but disabling, symptoms—those of what I venture to call "basket carriers' peri-articular fibrositis." All four are working, and organizing, for some 16 hours a day. All four wear complete upper and lower dentures. All four sleep indifferently and wake early, with painful paraesthesia of the right arm, which starts in the deltoid muscle and tracks, via the joint elements of the elbow, into the fingers. At breakfast they drop knives and teaspoons and are mentally irritable. As the day goes on the symptoms diminish, and by early evening they have for the most part disappeared—only to return in all their severity at bedtime, when the sufferers are only too ready, and anxious, to sleep. In all four *all* the fingers are affected, so that the question of cervical rib does not arise. On clinical examination no loss of muscular power or anaesthesia can be detected; but two of the patients present fibrositic nodules within the deltoid muscle, over the head of the humerus, as well as in the anconeus. As in so many cases of fibrositis, the cause appears problematical—possibly toxic, possibly postural, possibly occupational. Treatment has been disappointing. Salicylates have been prescribed, together with tincture of gelsemium and alternately small doses of Lugol's solution. The total fluid intake has been doubled or trebled. Coffee has been forbidden, likewise sherry—as if there were any need! Local heat and local deep, vigorous massage have afforded but temporary relief. The simplest prescription has perhaps produced the greatest comfort—a good hot morning bath, with a handful of washing soda; and a couple of tab. codein. co. at bedtime.

Nit-wits

DR. DEVEREUX FORREST (Torquay) writes: I am quite at a loss to find the point of the frequent papers recently on the greater incidence of infestation among those of meaner intelligence. Surely this is what a person with an average percentile intelligence score might reasonably expect—to wit, that it is highly probable that the less intelligent will also be the least careful in their personal hygiene and habits, thus being more prone to get infested; that when they are infested they will be slower to find it out; and that when they do find it out they will be slower still to deal with it adequately. I trust that this letter has not suggested a probable poor percentile intelligence score by myself!

Factors influencing Lactation

DR. JEAN MACKINTOSH (Aberdeen) writes: I should like to correct an error which has crept into your account of the meeting of the Scottish Group of the Nutrition Society (April 24, p. 517). There it states that "Dr. Mackintosh excluded diet as one of the main causes" of decreased incidence of breast-feeding. The relevant sentence in the paper reads as follows: "There are several other factors, however, which come into play besides any nutritional deficiency in the successful establishment and maintenance of breast-feeding." Good nutrition is very important, but there are other psychological factors which also play an important part. The incidence of breast-feeding at six months in the recent surveys quoted in my paper ranged between 30 and 40%.

Legal Protection for Serving Medical Officers

To judge from inquiries received from time to time some doctors holding commissions are still under the impression that because they are employed in the armed Forces it is not necessary for them to belong to one of the defence societies, on the assumption that such employment makes them immune to legal attack. As pointed out in these columns three years ago in a letter on the subject from the presidents of the Medical Defence Union and the London and Counties Medical Protection Society, legal proceedings against a medical man may be taken months, if not years, after the alleged negligence or misdemeanour has occurred. Every doctor is liable to legal attack, and he may require protection even against the authority by whom he is employed. Equally important is the fact that the Government does not accept responsibility for alleged errors of medical officers; it has never undertaken to do so, though in exceptional cases it has been known to take this action after pressure from a defence society. Again, a number of cases have occurred in which defence societies have defended doctors brought before courts martial on charges of alleged negligence or of alleged disciplinary offences. Added to all this members of a defence society may obtain free advice on a number of difficult questions; and, finally, it is worth while remembering that the subscription is exempt from income tax.

The Epiglottis in Anaesthetic Deaths

DR. ERNEST CULPIN (Brisbane) writes: The annotation on the epiglottis in anaesthetic deaths (Sept. 12, 1942, p. 344) is highly important, but the fact that such an article should have so prominent a position is a sad commentary on the medical profession. A free patent airway is an essential for all anaesthetics, and if the profession would learn from a natural demonstration such an article would not be necessary. It must be assumed that all members of the profession are acquainted with the gross anatomy of the air passages. The simple lesson is given by the position of the head, mouth, tongue, jaws, and neck of the athlete when nearing the tape in a 440-yards race or a 100-yards sprint, at which time he is endeavouring to get all the air (oxygen) he can by providing the clearest possible airway. This should be the position of the patient under anaesthesia, particularly during operation for removal of tonsils, when the epiglottis and probably the larynx will be under direct vision of the surgeon during the whole of the operation; in addition the entry of blood or dirty tonsillar secretion into the larynx will be controllable and prevented. The epiglottis will have no opportunity of occluding the larynx. The reported cases, wherein it is stated that after digital freeing of the epiglottis conditions were satisfactory, in themselves prove that the epiglottis should not and would not have caused the trouble had not neglect allowed it to do so.

[1] Min. of Hlth. Memo. 170/Med., 1940.